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ZOOPLANKTON VOLUMES OFF THE PACIFIC COAST, 1957

SPECIAL SCIENTIFIC REPORT–FISHERIES No. 326

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FISH AND WILDLIFE SERVICE

EXPLANATORY NOTE

The series embodies results of investigations, usually of restricted scope, intended to aid or direct management or utilization practices and as guides for administrative or legislative action. It is issued in limited quantities for official use of Federal, State or cooperating agencies and in processed form for economy and to avoid delay in publication.

United States Department of the Interior, Fred A. Seaton, Secretary
Fish and Wildlife Service, Arnie J. Suomela, Commissioner

ZOOPLANKTON VOLUMES OFF THE PACIFIC COAST, 1957

by

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Abstract

Basic data on volumes of zooplankton off the Pacific coast in 1957 are given, together with haul data for all plankton hauls taken on survey cruises of the California Cooperative Oceanic Fisheries Investigations. Plankton volumes were larger during February through April than the six-year average for these months, and progressively smaller during May through July than the six-year average. Distribution charts showing relative areal zooplankton abundance by month are included.

ZOOPLANKTON VOLUMES OFF THE PACIFIC COAST, 1957

The six reports in this series that appeared under the authorship of "Staff of the South Pacific Fishery Investigations" contained basic data for the seven-year period 1949 through 1955, but contained no distribution charts. Distribution charts for all routine cruises during these years were presented in Thrailkill, 1956. The report on zooplankton volumes for 1956 (Thrailkill 1957) and the present report for 1957 contain both basic data on zooplankton volumes and monthly distribution charts of zooplankton abundance.

Plankton samples are used by the U. S. Bureau of Commercial Fisheries in studying the early life histories of commercially important or potentially important fishes, including their distribution, abundance, and rate of survival. These collections are also used by Scripps Institution of Oceanography in studies of productivity.

These investigations are part of the California Cooperative Oceanic Fisheries Investigations, a program sponsored by the Marine Research Committee and carried out by the Scripps Institution of Oceanography of the University of California, the Bureau of Marine Fisheries of the California Department of Fish and Game, the California Academy of Sciences, the Hopkins Marine Station of Stanford University, and the U. S. Bureau of Commercial Fisheries, Biological Laboratory, La Jolla, California.

The vessels participating on each of the California Cooperative Oceanic Fisheries Investigations (CCOFI) cruises of 1957 are given in text table 1. The Black Douglas, operated by the Bureau of Commercial Fisheries made all the cruises between February and September 1957. Five vessels operated by the Scripps Institution of Oceanography took part in CCOFI cruises during the year. A chronological listing of CCOFI cruises for 1957, with information of the area covered and the numbers of stations occupied, are shown in text table 2. The stations occupied during 1957 are shown in figure 1.

The table in this report serves a twofold purpose: 1) as a record of basic haul data for all plankton hauls made during 1957, and 2) as a record of the volume of plankton obtained in each haul.

The information given for each plankton haul includes station number (column 1), position (columns 2 and 3), date and time of collection (columns 4 to 6), volume of water strained (column 7), estimated depth of haul (column 8), and volume obtained (columns 9 and 10).

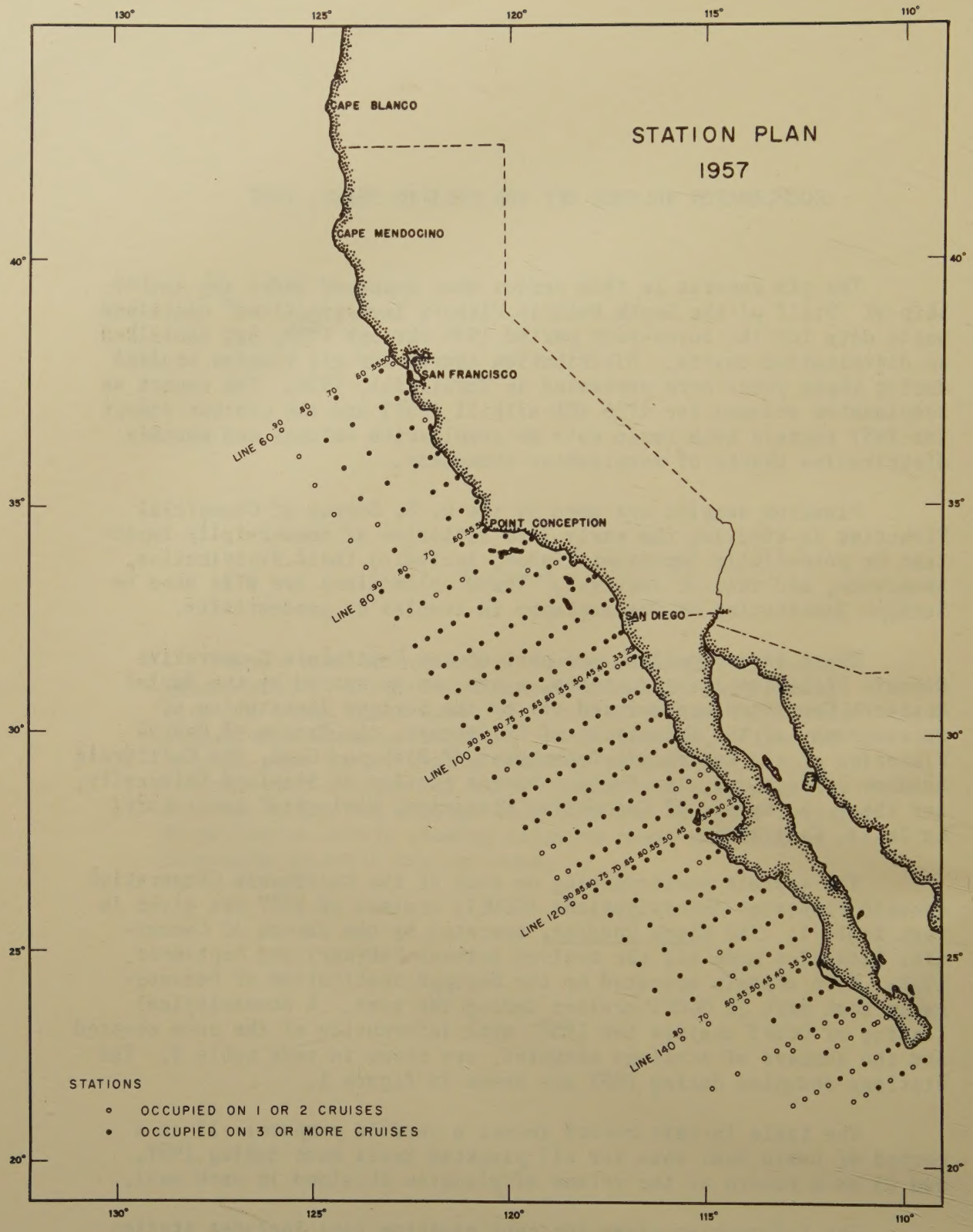

Figure 1.--Stations occupied on California Cooperative Oceanic Fisheries Investigations cruises during 1957.

Text table 1

Month	Cruise number	Number vessels	BLACK DOUGLAS	SPENCER F. BAIRD	HORIZON	STRANGER	PAOLINA T.	ORCA
January	5701	1	-	-	-	-	-	X
February	5702	3	X	X	X	-	-	-
March	5703	2	X	-	-	-	-	X
April	5704	3	X	-	X	X	-	-
May	5705	4	X	-	X	X	-	X
June	5706	4	X	-	X	X	-	X
July	5707	4	X	-	-	X	X	X
August	5708	2	X	-	-	X	-	-
September	5709	1	X	-	-	-	-	-
October	5710	2	*	-	-	X	X	-
November	5711	1	*	-	-	-	-	X
December	5712	1	*	-	-	-	X	-

* - Special cruise

Text table 2

Month	Cruise number	Area covered, station lines	Number of stations occupied
January	5701	100-137	57
February	5702	80-157	142
March	5703	80-150	124
April	5704	80-157	208
May	5705	60-137	205
June	5706	60-157	254
July	5707	60-137	217
August	5708	110-137	37
	5708	153,157	5
September	5709	110-137	37
October	5710	80-137	142
November	5711	70-97	44
December	5712	80-90 (110)	23

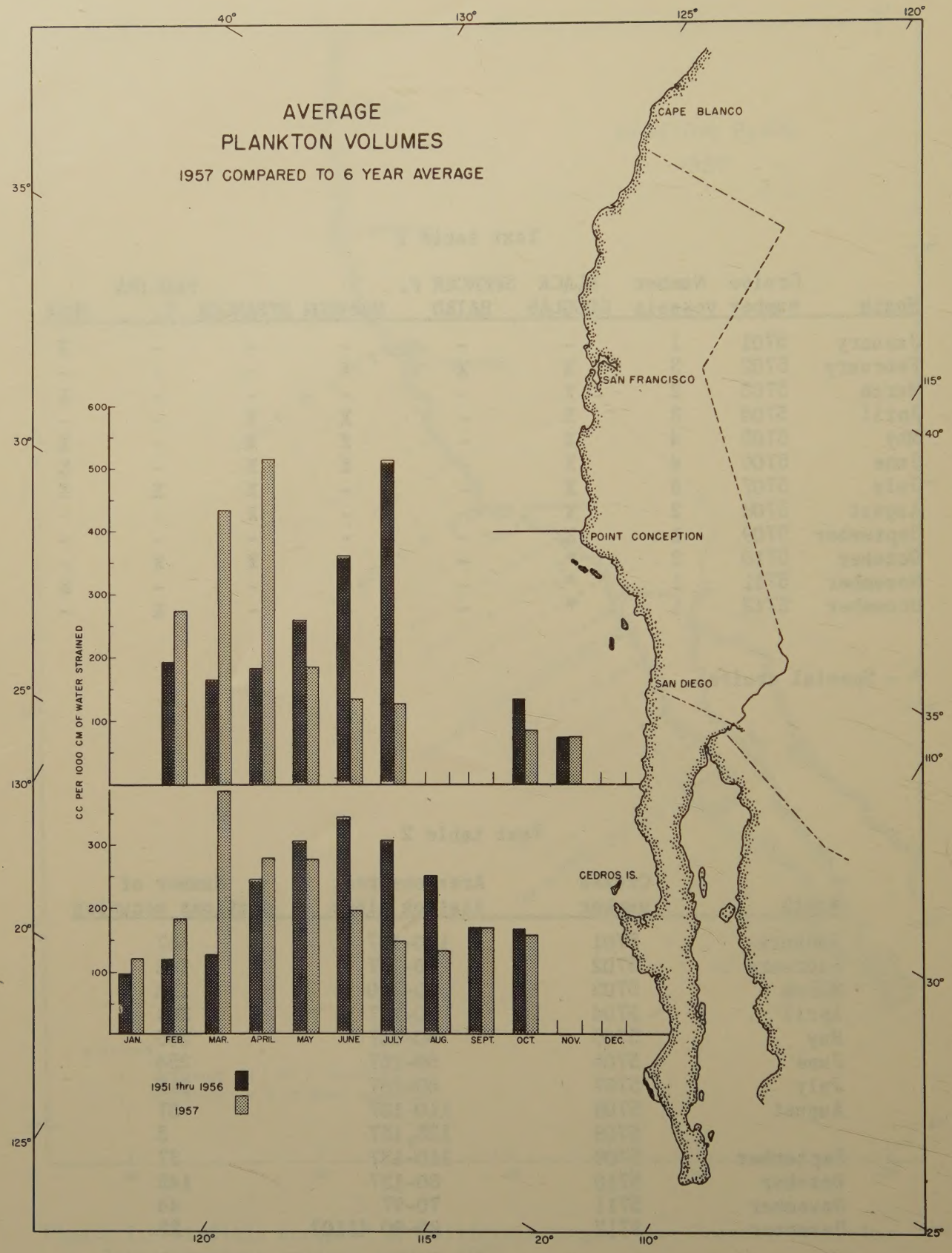

Figure 2.--Average plankton volumes in 1957 compared with average volumes 1951-1956, by month and area.

The method of determining the "wet" plankton volume of a sample is as follows: The plankton is separated from its preserving liquid (3% formalin) by filtering, allowed to drain, and then the displacement volume is obtained by placing the drained wet plankton in a graduated cylinder with a known volume of 3% formalin. Two volumes are obtained for each sample: the total wet volume of all plankton material, and the volume of smaller organisms. Larger organisms are arbitrarily limited to those whose volumes per individual exceed five cubic centimeters, and to juvenile and adult fishes irrespective of volume. These volumes are then standardized to the amount in one thousand cubic meters of water strained.

The distribution charts included in this report are based on the volume of smaller organisms only. In order to obtain a good contrast between light and heavy concentrations of plankton, five categories of abundance are used: (1) light, 0 to 33 cc. of plankton, (2) moderate, 34 to 100 cc. of plankton, (3) average, 101 to 300 cc. of plankton, (4) fairly heavy, 301 to 900 cc. of plankton, and (5) heavy, more than 900 cc. of plankton. The distribution charts are of two kinds: a chart based on the average plankton volumes at each station during the year (fig. 3), and a series of monthly charts (figs. 4-15) which accompany the plankton volume data.

Plankton nets used during 1957 were constructed of either No. 30xxx grit gauze (an extra heavy type of silk bolting cloth) or of nylon bolting cloth of fairly similar mesh size. The nets were 1 meter in diameter at the mouth, and approximately 5 meters in overall length.

Each haul was an oblique tow made from approximately 140 meters deep to the surface (depth of water permitting). Since 1951, this has been our standard method of taking net tows; therefore, in this report, the 1957 plankton volumes are compared only with those taken from 1951 through 1956 (fig. 2). During 1949 and 1950, the tows were taken from depths of about 70 meters to the surface.

Comparison of 1957 plankton volumes with those obtained in 1951-1956

The portion of the CCOFI survey area that has been most consistently occupied lies between Point Conception, California, and Point San Juanico, Baja California (station lines 80-137). In other studies (Ahlstrom 1954), this area has been divided into two roughly equal parts: a northern portion comprising the station lines off southern California and northern Baja California (lines 80-107), and a southern portion made up of the station lines off central Baja California (lines 110-137). This division is followed in comparing 1957 plankton volumes with those of previous years.

Coverage of these areas usually has been obtained at monthly intervals during the period of heavy sardine spawning, the first seven months of the year, and less frequently and less completely during the remaining five months of each year.

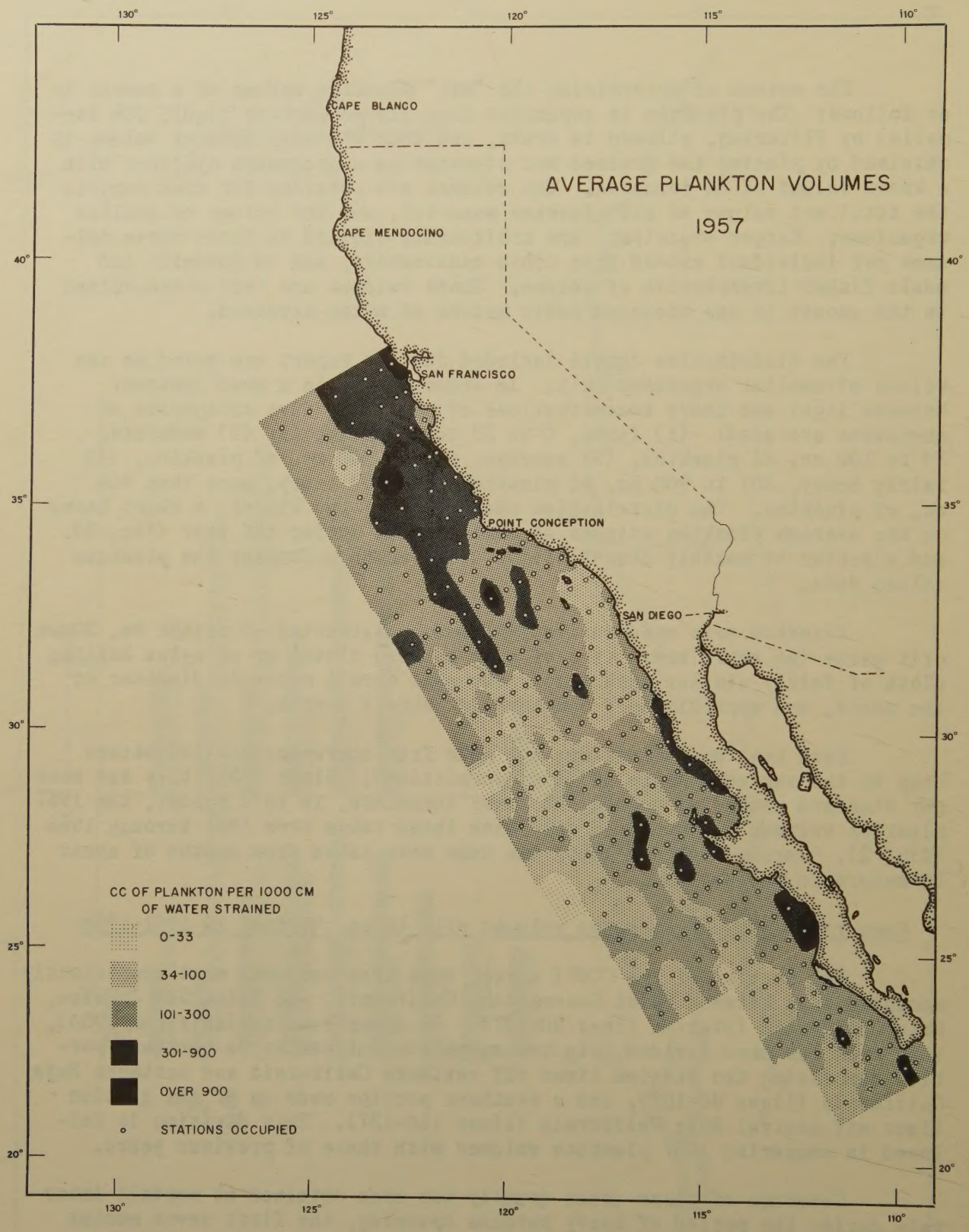

Figure 3.--Average plankton volumes, 1957

Unfortunately, there was a limited coverage during the January 1957 cruise (5701). Two vessels had been scheduled to make this cruise, but only one participated due to emergency repair of the other. Most of the stations occupied were in the southern area. There was no coverage in the area off southern California and northern Baja California during August and September 1957, and partial coverage during November and December. The area off central Baja California was occupied monthly between January and October with coverage limited to the inshore portion during August and September. This area was not occupied during November and December 1957.

The average monthly plankton volumes taken in the area off southern California and northern Baja California (station lines 80-107) for the months of February through July, 1951-1957, are given in text table 3. The average monthly plankton volumes in the area off central Baja California (lines 110-137) for the same time period are summarized in text table 4.

The average volume of plankton obtained on each cruise during 1957 is compared with the monthly averages of the preceding six years (1951-1956) combined in figure 2. In the area off southern California and northern Baja California, plankton volumes reached a peak in April 1957 and decreased markedly thereafter. Volumes were larger during February through April than the six-year average for these months, and progressively smaller during May through July than the six-year average.

In the area off central Baja California, 1957 plankton volumes were not as markedly different from those of the preceding six-year period as in the northern area. The largest volumes were taken earlier in the year, however, the peak month in this area being March in 1957, with volumes progressively decreasing thereafter through August.

It is with deep pleasure that the author acknowledges the cooperation given by the Scripps Institution of Oceanography in the collection of data at sea. All personnel of the Bureau of Commercial Fisheries Biological Laboratory, La Jolla, California, contributed to this project - many devoting their full time to it.

Text table 3.--Average monthly plankton volumes in the area off southern California and adjacent northern Baja California (sta. lines 80-107) for the months of February through July, 1951-57.

Year	February	March	April	May	June	July
1951	140	98	133	143	187	70
1952	317	205	151	152	228	234
1953	150	247	231	448	621	1369
1954	199	144	134	193	331	255
1955	157	135	195	230	353	350
1956	195	169	264	420	453	808
1951-56 average	193	166	185	264	362	514
1957	267	424*	518	188	134	128

Text table 4.--Average monthly plankton volumes in the area off central Baja California (sta. lines 110-137) for the months of February through July, 1951-57.

Year	February	March	April	May	June	July
1951	55	50	62	85	104	85
1952	69	123	122	128	159	311
1953	101	142	182	223	295	232
1954	101	69	197	130	178	178
1955	138	146	503	630	492	289
1956	258	214	395	632	824	743
1951-56 average	120	124	244	305	342	306
1957	183	375	279	275	195	147

* - Volumes for 1957 are underlined when they are either the highest or lowest in the series of seven years.

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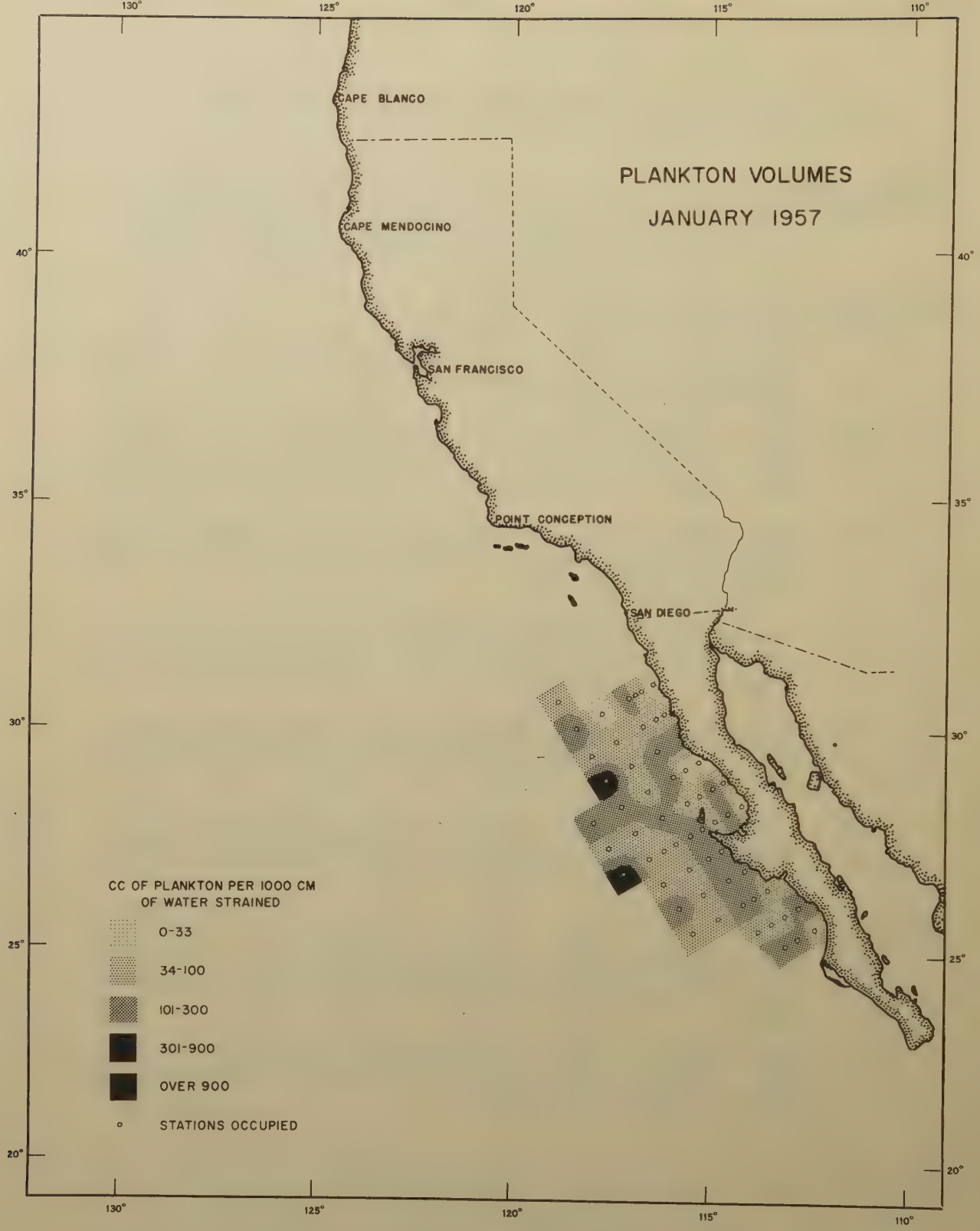

Figure 4.--Plankton volumes, January 1957

Plankton Volumes, Cruise 5701, January 1957

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
100.60	30°39.5'	118°50'	I-19	0106	0121	474	0-141	574	89
103.30	31°05'	116°25'	I-18	0319	0324	185	0-45	32	32
103.35	30°55'	116°45'	I-18	0556	0611	478	0-139	217	46
103.38	30°49'	116°57'	I-18	0811	0826	475	0-138	633	76
103.40	30°44.8'	117°05.5'	I-18	0946	1001	460	0-141	559	168
103.50	30°25'	117°46'	I-18	1456	1510	454	0-137	945	31
103.60	30°04.5'	118°25.5'	I-18	1956	2010	447	0-141	228	228
107.32	30°32.2'	116°15.3'	I-17	2246	2301	469	0-137	115	68
107.35	30°26'	116°25.5'	I-17	2051	2106	482	0-140	66	66
107.40	30°16.5'	116°46.7'	I-17	1826	1841	492	0-141	222	85
107.50	29°49'	117°22.5'	I-17	1311	1326	525	0-139	297	34
107.60	29°30'	117°57'	I-17	0656	0711	475	0-150	67	67
110.40	29°36.1'	116°19.5'	I-16	1316	1331	489	0-141	213	102
110.50	29°16'	116°59'	I-16	1846	1901	508	0-139	476	63
110.60	28°56'	117°38'	I-17	0011	0026	482	0-139	384	384
113.30	29°20.2'	115°23'	I-14	2012	2022	383	0-96	18	18
113.35	29°10.8'	115°41.2'	I-14	1626	1641	511	0-139	27	27
113.40	29°02'	115°58.5'	I-14	1256	1311	531	0-136	399	162
113.50	28°41'	116°38'	I-14	0536	0551	503	0-140	267	74
113.60	28°22'	117°15'	I-13	2326	2340	506	0-140	237	190
113.70	28°02.5'	117°55.5'	I-13	1756	1811	529	0-139	408	213
117.26	28°55.5'	114°41'	I-12	0329	0336	269	0-69	82	82
117.30	28°48'	114°56.1'	I-12	0547	0558	371	0-98	154	154
117.35	28°37.8'	115°15.7'	I-12	0831	0846	523	0-140	73	73
117.40	28°28'	115°35.5'	I-12	2051	2105	527	0-141	173	93
117.50	28°08'	116°15'	I-13	0146	0201	527	0-139	154	154
117.60	27°47.3'	116°52.5'	I-13	0720	0736	516	0-139	485	87
117.70	27°27'	117°32.8'	I-13	1216	1231	504	0-140	211	211
120.25	28°23.2'	114°14.8'	I-11	2159	2205	216	0-49	23	23
120.30	28°13'	114°34'	I-11	1838	1847	335	0-82	155	155
120.35	28°03'	114°54'	I-11	1408	1416	295	0-69	74	74
120.40	27°53'	115°13'	I-11	1120	1122	108	0-14	185	185
120.45	27°43'	115°33'	I-10	1321	1336	506	0-141	107	107
120.50	27°33'	115°52.5'	I-10	1016	1031	507	0-138	51	51
120.55	27°22.5'	116°11'	I-10	0706	0721	512	0-143	68	68
120.60	27°13'	116°30.5'	I-10	0411	0426	514	0-136	280	82
120.70	26°53'	117°10.5'	I-9	2336	2350	480	0-142	356	356
123.37	26°24'	114°40'	I-9	0353	0401	279	0-69	115	115
123.42	27°14'	114°59'	I-9	0646	0701	506	0-140	126	126
123.50	26°57.7'	115°30.5'	I-9	1051	1106	493	0-140	77	77
123.60	26°39'	116°08'	I-9	1611	1626	512	0-139	82	82
127.34	26°55.2'	114°06'	I-8	2253	2301	290	0-71	176	176
127.40	26°38.5'	114°29'	I-8	1946	2001	514	0-140	202	202

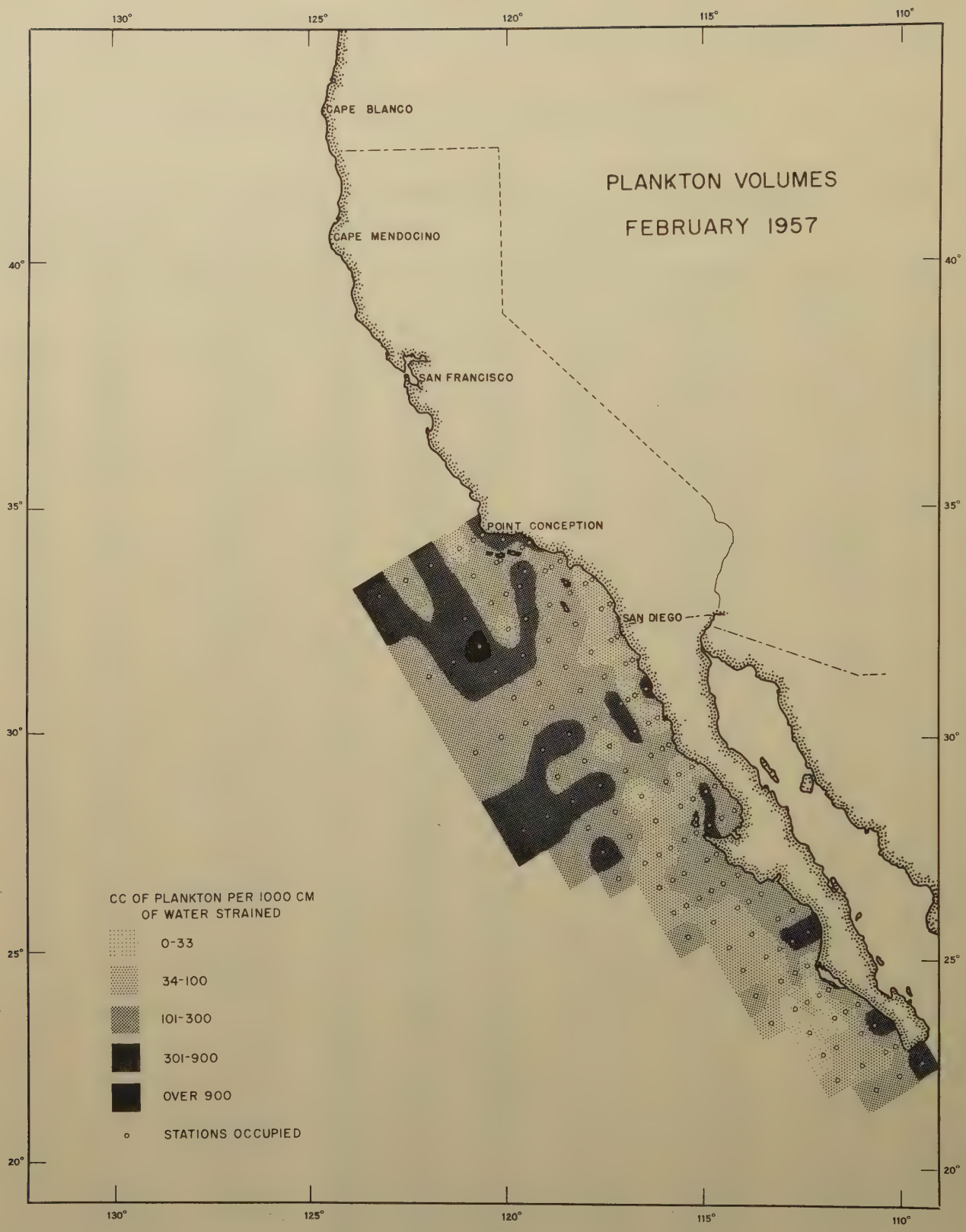

Figure 5.--Plankton volumes, February 1957

Plankton Volumes, Cruise 5701, January 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
127.50	26°27.5'	114°59.5'	I-8	1516	1531	518	0-136	87	87
127.60	26°05'	115°45.5'	I-8	0906	0921	496	0-140	121	121
130.30	26°28.9'	113°28.8'	I-7	1123	1131	322	0-77	43	43
130.35	26°19'	113°48.3'	I-7	1436	1451	523	0-136	249	249
130.40	26°09'	114°06.5'	I-7	1746	1801	496	0-143	212	212
130.50	25°49'	114°45'	I-7	2246	2301	500	0-141	78	78
130.60	25°29.5'	115°23'	I-8	0356	0411	498	0-143	64	64
133.25	26°02.5'	112°51.7'	I-7	0549	0557	319	0-84	135	135
133.30	25°54.5'	113°07.5'	I-7	0302	0312	319	0-84	53	53
133.35	25°44.5'	113°26'	I-6	2336	2350	503	0-141	64	64
133.40	25°34.5'	113°45.3'	I-6	2026	2041	523	0-140	71	71
137.23	25°34'	112°18'	I-6	0623	0631	289	0-70	59	59
137.30	25°20'	112°45'	I-6	1016	1031	498	0-142	157	157
137.35	25°10'	113°05'	I-6	1410	1425	524	0-140	101	101

Plankton Volumes, Cruise 5702, February 1957

80.51	34°26.5'	120°32.5'	II-6	1907	1916	326	0-80	319	319
80.55	34°19'	120°48'	II-6	2141	2156	466	0-138	395	227
80.60	34°09'	121°09'	II-7	0016	0030	407	0-138	91	91
80.70	33°49'	121°51'	II-7	0536	0550	500	0-136	1169	408
80.80	33°29'	122°32'	II-7	1051	1106	468	0-138	177	177
80.90	33°09'	123°13'	II-7	1546	1601	442	0-135	1407	412
82.47	34°15'	119°58'	II-8	1416	1430	499	0-133	501	381
83.40	34°11.1'	119°22'	II-8	1959	2001	96	0-14	365	365
83.43	34°08'	119°34'	II-8	1746	1800	476	0-143	386	197
83.51	33°52'	120°08.5'	II-8	1016	1028	272	0-123	556	276
83.52	33°50'	120°12'	II-8	0906	0920	523	0-134	124	124
83.60	33°37.5'	120°45.5'	II-8	0506	0520	562	0-132	289	199
86.46	33°36'	119°29.5'	II-9	0721	0735	345	0-141	1720	328
87.36	33°48'	118°41.5'	II-9	0121	0136	476	0-127	647	122
87.38	33°44'	118°50'	II-9	0221	0236	444	0-134	500	248
87.40	33°40'	118°58.5'	II-9	0406	0420	446	0-136	1068	215
87.50	33°20'	119°39.5'	II-9	1048	1056	206	0-61	1317	515
87.55	33°10'	120°00.5'	II-9	1321	1336	535	0-136	234	234
87.60	33°00'	120°21.5'	II-9	1626	1640	494	0-139	209	209
87.70	32°39.5'	121°02'	II-9	2105	2120	501	0-141	1738	879
90.28	33°28.5'	117°46.7'	II-11	1801	1815	502	0-138	64	64
90.30	33°24.5'	117°55'	II-11	1626	1640	440	0-137	905	86
90.37	33°11'	118°23.5'	II-11	1206	1221	494	0-130	107	107
90.45	32°54.5'	118°56'	II-11	0841	0855	440	0-141	8809	205
90.55	32°34.8'	119°36.8'	II-11	0126	0140	479	0-142	858	305

Plankton Volumes, Cruise 5702, February 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
								Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	cc.	cc.
90.60	32°25'	119°57.5'	II-10	2136	2150	487	0-142	172	72
90.70	32°04.5'	120°39'	II-10	1636	1651	462	0-142	5742	1645
90.80	31°49'	121°18.5'	II-10	1256	1311	494	0-143	587	587
90.90	31°29'	122°02'	II-10	0736	0750	497	0-140	1166	241
93.27	32°56'	117°19.2'	II-11	2251	2304	437	0-126	69	69
93.30	32°50'	117°31.5'	II-12	0046	0101	500	0-133	130	68
93.40	32°30'	118°12.5'	II-13	1546	1601	502	0-139	602	104
93.50	32°10'	118°53.5'	II-13	2101	2115	468	0-145	173	173
93.60	31°50'	119°34'	II-14	0136	0151	433	0-146	739	739
93.70	31°29'	120°14'	II-14	0646	0701	444	0-140	585	585
97.30	32°15.4'	117°08.8'	II-15	0918	0924	178	0-48	118	118
97.32	32°11.5'	117°17'	II-15	0756	0810	416	0-137	84	84
97.40	31°55.5'	117°50'	II-15	0336	0350	458	0-142	609	85
97.50	31°35.5'	118°30.5'	II-14	2256	2310	461	0-140	648	269
97.60	31°15'	119°11'	II-14	1605	1620	433	0-140	289	178
97.70	30°54.7'	119°44'	II-14	1131	1145	488	0-142	422	297
100.29	31°42.2'	116°43.4'	II-15	1401	1415	419	0-125	91	91
100.33	31°34.5'	116°59'	II-15	1646	1701	470	0-132	64	64
100.40	31°21'	117°27'	II-15	2006	2020	484	0-135	180	138
100.50	31°01'	118°07'	II-16	0056	0110	468	0-130	190	190
100.60	30°44'	118°40'	II-16	0536	0551	413	0-141	624	213
100.70	30°27.5'	119°13.5'	II-16	1016	1030	392	0-142	107	107
100.80	30°01'	120°07'	II-16	1646	1700	412	0-141	114	114
100.90	29°40.5'	120°47'	II-16	2141	2155	389	0-144	136	136
103.30	31°05.2'	116°25'	II-18	0548	0555	176	0-60	461	461
103.35	30°55.5'	116°45'	II-18	0256	0311	409	0-141	81	81
103.38	30°49.5'	116°57.2'	II-18	0056	0110	434	0-142	97	97
103.40	30°45.5'	117°05.5'	II-17	2351	0005	441	0-138	363	363
103.50	30°25.5'	117°45.5'	II-17	1756	1810	410	0-147	2265	190
103.60	30°06'	118°25.5'	II-17	1321	1336	455	0-138	308	308
103.70	29°46'	119°05.5'	II-17	0821	0835	424	0-137	613	613
107.32	30°25.8'	116°11'	II-18	1401	1416	492	0-138	71	71
107.35	30°20'	116°23'	II-18	1556	1610	451	0-143	82	82
107.40	30°10.5'	116°43.5'	II-18	1846	1901	452	0-142	1332	690
107.50	29°50.5'	117°23.5'	II-18	2326	2341	500	0-136	64	64
107.60	29°31'	118°03'	II-19	0406	0420	497	0-140	382	221
107.70	29°11'	118°43'	II-19	0901	0916	577	0-134	234	234
110.33	29°50.5'	115°52.2'	II-20	2333	2339	207	0-54	188	188
110.35	29°46.5'	116°00'	II-20	2216	2230	459	0-142	142	142
110.40	29°36.5'	116°19.5'	II-20	1926	1941	505	0-141	170	170
110.50	29°16.5'	116°59'	II-20	1436	1451	510	0-136	147	147
110.60	28°56.5'	117°39'	II-20	0951	1005	528	0-135	493	493
110.70	28°36.5'	118°18'	II-20	0416	0431	478	0-141	1058	661

Plankton Volumes, Cruise 5702, February 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
110.80	28°16.5'	118°57.8'	II-19	2336	2351	531	0-135	659	414
110.90	27°56.5'	119°36'	II-19	1846	1901	483	0-139	895	553
113.30	29°21.4'	115°16.5'	II-20	1915	1922	259	0-66	77	77
113.35	29°12.7'	115°39'	II-20	1709	1723	514	0-129	93	93
113.40	29°03'	115°59'	II-20	1456	1511	492	0-124	104	104
113.50	28°42.3'	116°40'	II-20	1056	1111	498	0-100	10	10
113.60	28°24.7'	117°15.4'	II-20	0726	0740	549	0-119	129	129
113.70	28°05.7'	117°52'	II-20	0356	0410	501	0-131	106	106
117.26	28°54.6'	114°40.5'	II-17	2050	2058	264	0-62	227	227
117.30	28°47.8'	114°55.7'	II-17	1857	1908	398	0-83	321	321
117.35	28°38'	115°16'	II-17	1638	1653	635	0-98	94	94
117.40	28°27.6'	115°36.3'	II-19	1116	1131	548	0-127	58	58
117.50	28°07.4'	116°15.6'	II-19	1458	1512	477	0-134	50	50
117.60	27°41'	116°56.2'	II-19	2101	2116	501	0-121	513	224
117.70	27°32'	117°31.2'	II-20	0025	0040	387	0-156	501	501
120.25	28°23'	114°14.5'	II-18	0025	0032	236	0-70	140	140
120.30	28°13'	114°34'	II-18	0312	0322	296	0-87	284	284
120.35	28°03'	114°54'	II-16	0808	0815	263	0-64	395	395
120.40	27°56.5'	115°14'	II-16	0609	0613	142	0-33	282	282
120.45	27°42.5'	115°34.7'	II-16	0020	0034	464	0-129	119	119
120.50	27°33'	115°52.5'	II-15	2156	2211	470	0-130	81	81
120.55	27°20.5'	116°09.5'	II-15	1951	2006	557	0-131	63	54
120.60	27°11.5'	116°29'	II-15	1631	1646	448	0-142	45	45
120.70	26°58'	117°07'	II-15	1231	1246	462	0-139	284	284
120.80	26°27.5'	117°47'	II-15	0740	0755	517	0-127	182	161
123.37	27°24.7'	114°39'	II-14	1108	1115	316	0-54	212	212
123.42	27°11.8'	115°03.4'	II-14	1346	1401	482	0-129	183	183
123.50	26°58.5'	115°29.2'	II-14	1656	1710	514	0-122	148	148
123.55	26°48'	115°50'	II-14	2004	2019	617	0-140	149	149
123.60	26°38.5'	116°09'	II-14	2325	2340	553	0-123	76	76
127.34	26°50.5'	114°12.6'	II-14	0601	0606	192	0-50	146	146
127.40	26°39.9'	114°32.8'	II-14	0336	0351	423	0-149	191	191
127.45	26°31.5'	114°50'	II-14	0106	0120	535	0-134	157	157
127.50	26°23.5'	115°08'	II-13	2256	2311	501	0-132	108	108
127.55	26°13.8'	115°26.5'	II-13	2026	2041	435	0-151	60	60
127.60	25°01'	115°40'	II-13	1756	1811	509	0-136	88	88
130.30	26°29'	113°29'	II-13	0203	0211	360	0-58	231	189
130.35	26°18.5'	113°48.5'	II-13	0413	0428	537	0-117	181	181
130.40	26°07.7'	114°09'	II-13	0621	0636	490	0-128	51	51
130.50	25°53'	114°46'	II-13	1000	1014	475	0-141	40	40
130.60	25°28'	115°20.6'	II-13	1405	1420	504	0-132	115	115
133.25	26°04.5'	112°48'	II-12	2143	2151	253	0-35	178	178
133.30	25°54.5'	113°07.5'	II-12	1911	1926	534	0-126	174	148

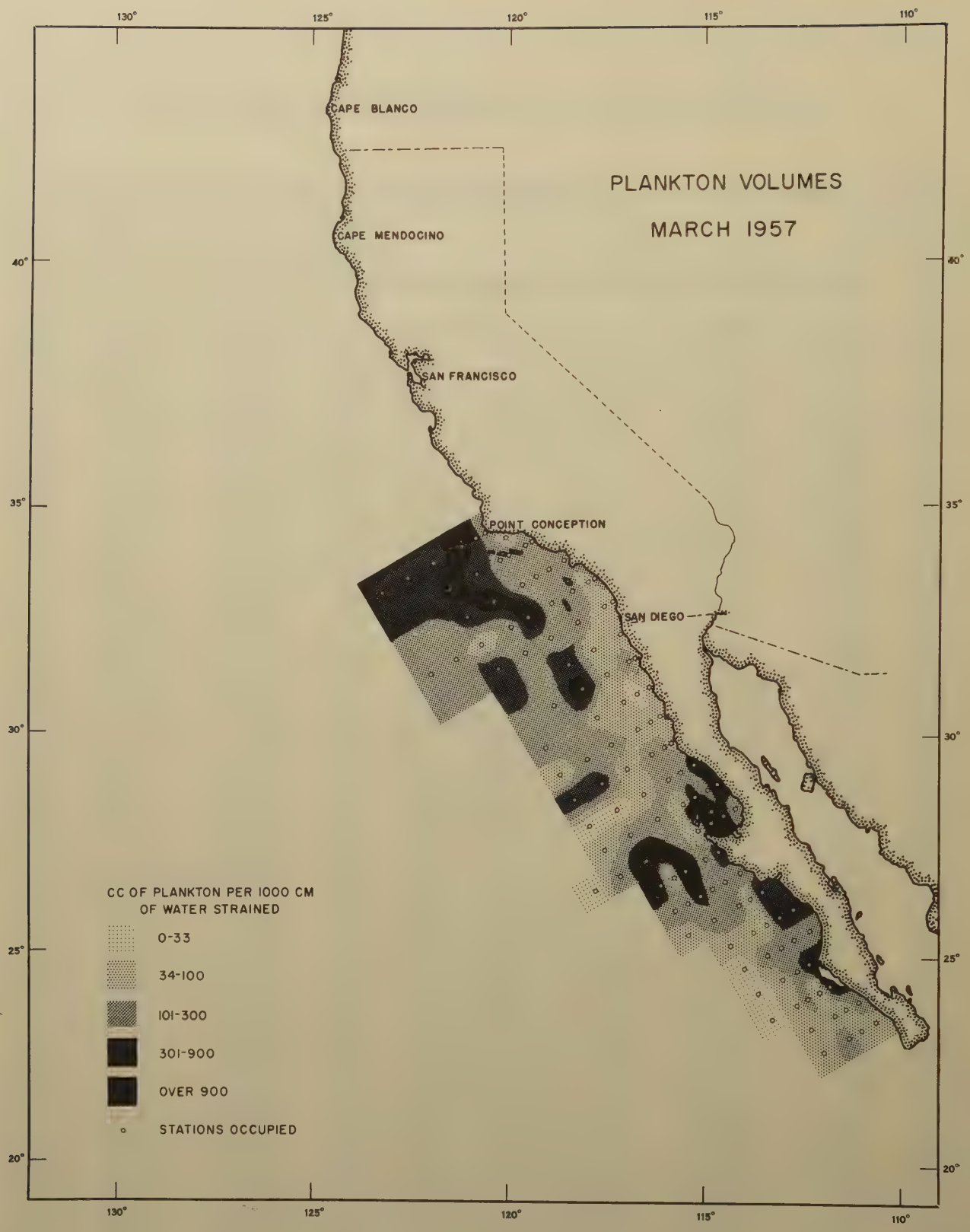

Figure 6.--Plankton volumes, March 1957

Plankton Volumes, Cruise 5702, February 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
133.40	25°34.5'	113°34.5'	II-12	0830	0845	572	0-121	47	47
133.50	25°16'	114°21.8'	II-12	0421	0436	452	0-144	51	51
137.23	25°34.2'	112°18.7'	II-11	1335	1342	289	0-62	402	384
137.30	25°25.3'	112°47.3'	II-11	1611	1626	517	0-129	704	704
137.35	25°18.2'	113°08.3'	II-11	1826	1841	530	0-130	158	87
137.40	25°00'	113°23.5'	II-11	2056	2111	556	0-123	86	72
137.50	24°44.5'	114°00'	II-12	0044	0058	516	0-123	39	39
140.30	24°45.5'	112°24'	II-11	0817	0828	443	0-91	93	93
140.35	24°36'	112°43'	II-11	0556	0610	591	0-108	124	124
140.40	24°25.5'	113°02.	II-11	0331	0346	490	0-139	82	82
140.50	24°05.5'	113°39.5'	II-10	2301	2316	448	0-151	112	112
143.26	24°19'	111°48'	II-9	0812	0822	441	0-91	259	259
143.30	24°09'	112°01'	II-10	0941	0955	546	0-131	134	33
143.35	23°58.5'	112°24'	II-10	1156	1211	565	0-117	53	44
143.40	23°51'	112°42.2'	II-10	1440	1454	477	0-136	13	13
143.50	23°24.8'	113°19.5'	II-10	1840	1854	477	0-144	86	86
147.20	23°56'	111°03.5'	II-9	0301	0315	477	0-147	269	143
147.25	23°46.5'	111°22.5'	II-8	2346	2400	434	0-158	81	81
147.30	23°36'	111°41.5'	II-8	2051	2105	484	0-139	322	33
147.40	23°17.1'	112°19.4'	II-8	1431	1445	533	0-121	23	23
150.19	23°24.3'	110°40.8'	II-8	0027	0038	432	0-89	578	435
150.25	23°08.3'	111°04.6'	II-8	0326	0340	475	0-146	425	95
150.35	22°48.8'	111°35.5'	II-8	0716	0731	467	0-158	36	36
150.40	22°42.5'	111°55.4'	II-8	1011	1025	563	0-129	46	11
153.16	22°55'	110°07.5'	II-8	0556	0610	605	0-111	53	53
153.16	22°55'	110°07.2'	II-24	1656	1711	431	0-123	258	258
153.20	22°47.5'	110°22'	II-24	1406	1421	438	0-149	62	62
153.30	22°27'	110°59'	II-24	0921	0936	434	0-131	55	55
153.40	22°04.2'	111°42.2'	II-24	0356	0410	530	0-119	40	40
157.10	22°33.3'	109°21.9'	II-8	1131	1146	655	0-74	318	318
157.20	22°07.9'	110°06.2'	II-23	1411	1426	430	0-151	130	130
157.30	21°48.4'	110°38.3'	II-23	1826	1840	444	0-130	250	250

Plankton Volumes, Cruise 5703, March 1957

80.51	34°26'	120°32'	III-7	1314	1321	258	0-79	7380	147
80.55	34°19'	120°49'	III-7	1516	1530	481	0-142	638	638
80.60	34°09'	121°09'	III-7	1856	1911	474	0-143	2807	1921
80.70	33°49'	121°50'	III-8	0027	0042	498	0-137	1775	731
80.80	33°29'	122°32'	III-8	0541	0556	484	0-140	469	469
80.90	33°09'	123°12'	III-8	1056	1111	481	0-142	1064	649
82.47	34°15'	119°58'	III-9	1146	1201	498	0-137	100	100
83.40	34°14'	119°22'	III-9	1603	1606	100	0-21	120	120
83.43	34°07'	119°35'	III-9	1426	1441	489	0-138	184	184

Plankton Volumes, Cruise 5703, March 1957 (cont'd)

Sta.	Position N.lat.	W.long.	(1957) Date	Time (PST) Start	End	Vol. water strained C.M.	Depth of haul in meters	Vol.per 1000 C.M.strained Total cc.	Sm.org. cc.
83.48	33°58'	119°56'	III-9	0918	0926	266	0-67	109	109
83.52	33°50'	120°12'	III-9	0706	0720	502	0-136	693	223
83.60	33°34'	120°45'	III-9	0329	0344	476	0-140	1778	695
83.70	33°14'	121°26'	III-8	2115	2130	490	0-141	1910	1910
87.36	33°48'	118°45'	III-9	2101	2116	473	0-142	127	127
87.40	33°40'	118°59'	III-10	0001	0016	496	0-137	202	202
87.45	33°30'	119°19'	III-11	1213	1228	462	0-144	121	121
87.50	33°20'	119°39'	III-11	1528	1536	245	0-72	412	220
87.60	33°00'	120°22'	III-11	2056	2111	473	0-139	5816	5615
87.70	32°40'	121°03'	III-12	0203	0218	476	0-140	341	341
90.28	33°30'	117°47'	III-17	0114	0122	307	0-69	218	218
90.30	33°25'	117°55'	III-16	2346	0001	435	0-145	97	97
90.37	33°11'	118°24'	III-16	1941	1955	464	0-140	147	147
90.45	32°55'	118°56'	III-16	1521	1536	477	0-140	362	184
90.55	32°35'	119°37'	III-16	0956	1011	452	0-139	1782	1782
90.60	32°25'	119°58'	III-16	0656	0711	487	0-139	361	287
90.70	32°05'	120°38'	III-12	2341	2356	497	0-139	93	93
90.80	31°45'	121°19'	III-12	1806	1820	488	0-140	291	115
90.90	31°25'	121°59'	III-12	1246	1300	444	0-140	257	257
93.27	32°56'	117°19'	III-17	0621	0636	468	0-138	77	77
93.30	32°50'	117°32'	III-17	1001	1016	473	0-141	80	80
93.40	32°30'	118°12'	III-17	1510	1524	430	0-139	189	189
93.50	32°10'	118°53'	III-17	2011	2026	464	0-140	569	138
93.60	31°51'	119°34'	III-18	0125	0140	428	0-139	240	170
93.70	31°30'	120°15'	III-18	0635	0650	459	0-138	532	532
97.30	32°16'	117°09'	III-19	1253	1300	208	0-53	96	96
97.40	32°07'	117°28'	III-19	1013	1028	458	0-142	63	63
97.50	31°45'	118°11'	III-19	0440	0455	474	0-135	555	555
100.29	31°41'	116°43'	III-20	2311	2326	418	0-146	72	72
100.33	31°35'	116°59'	III-21	0134	0148	418	0-143	108	108
100.40	31°21'	117°27'	III-21	0528	0542	465	0-142	73	73
100.50	31°01'	118°08'	III-21	1036	1051	450	0-143	2171	2171
100.60	30°40'	118°47'	III-21	1536	1551	464	0-139	183	183
103.30	31°05'	116°25'	III-29	2047	2052	137	0-40	80	80
103.35	30°55'	116°45'	III-29	1754	1809	470	0-137	15	15
103.40	30°45'	117°06'	III-29	1516	1530	361	0-143	36	36
103.50	30°26'	117°44'	III-29	1008	1023	458	0-142	59	59
103.60			Occupied. Sample lost						
103.70	29°43'	118°42'	III-21	2331	2346	463	0-144	242	242
107.32	30°26'	116°11'	III-28	1128	1142	419	0-139	52	52
107.35	30°19'	116°23'	III-28	1325	1339	442	0-142	38	38
107.40	30°10'	116°43'	III-28	1616	1630	453	0-139	35	35
107.50	29°50'	117°24'	III-28	2121	2136	462	0-139	225	225
107.60	29°32'	118°02'	III-29	0232	0246	374	0-142	158	158
107.70	29°12'	118°40'	III-26	2206	2221	458	0-142	92	92
110.33	29°50'	115°52'	III-28	0138	0146	170	0-77	59	59

Plankton Volumes, Cruise 5703, March 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
110.35	29°46'	116°00'	III-28	0001	0016	391	0-137	238	238
110.40	29°36'	116°19'	III-27	2010	2025	440	0-145	195	195
110.50	29°17'	117°00'	III-27	1445	1500	381	0-142	60	60
110.60	28°56'	117°39'	III-27	0909	0927	523	0-145	570	570
110.70	28°37'	118°18'	III-27	0336	0350	464	0-144	496	496
113.30	29°22.5'	115°17.5'	III-22	0109	0113	147	0-43	579	579
113.35	29°12'	115°39'	III-21	2231	2245	473	0-150	133	133
113.40	29°02'	115°58.5'	III-21	1941	1956	425	0-149	148	148
113.50	28°42.1'	116°35.4'	III-21	1506	1520	438	0-145	68	68
113.60	28°22'	117°16.5'	III-21	1021	1035	449	0-141	31	31
113.70	28°02'	117°55.5'	III-21	0526	0540	467	0-142	26	26
117.26	28°56'	114°41'	III-19	2308	2314	138	0-45	3408	3408
117.30	28°48'	114°56.5'	III-20	0138	0146	272	0-84	209	209
117.35	28°38'	115°16'	III-20	0421	0436	420	0-145	610	610
117.40	28°28'	115°35.5'	III-20	0646	0700	452	0-135	75	75
117.50	28°07.6'	116°14.4'	III-20	1416	1430	444	0-138	101	101
117.60	27°47.5'	116°54'	III-20	1930	1946	461	0-142	187	187
117.70	27°27.5'	117°32.5'	III-21	0026	0040	440	0-141	39	39
118.39	28°18.5'	115°24'	III-20	0901	0915	541	0-130	1375	1375
119.33	28°19'	114°53'	III-19	1328	1336	263	0-85	929	929
120.25	28°23'	114°14.5'	III-19	1748	1754	175	0-52	189	189
120.30	28°13'	114°34'	III-19	1527	1537	305	0-92	446	446
120.35	28°03'	114°54'	III-19	1123	1130	255	0-58	2985	2985
120.40	27°56.5'	115°14'	III-19	0916	0920	129	0-24	54	54
120.60	27°12.1'	116°22'	III-18	1841	1856	460	0-132	921	921
120.70	26°52.5'	117°10'	III-18	1216	1230	404	0-151	133	133
120.80	26°32.5'	117°48.5'	III-18	0701	0715	437	0-142	14	14
123.37	27°24'	114°39.7'	III-17	0908	0915	168	0-54	596	596
123.42	27°14'	114°59.3'	III-17	1146	1200	455	0-136	132	132
123.50	26°59.1'	115°30.4'	III-17	1556	1610	465	0-140	1020	1020
123.55	26°48.8'	115°52'	III-17	1846	1900	471	0-136	100	100
123.60	26°38.5'	116°09'	III-17	2106	2120	494	0-140	689	689
127.34	26°55.3'	114°06'	III-17	0343	0350	231	0-71	229	229
127.40	26°41.3'	114°21.7'	III-17	0025	0040	381	0-143	115	115
127.45	26°30.7'	114°42.6'	III-16	2136	2150	481	0-132	158	158
127.50	26°20.2'	115°02.8'	III-16	1841	1856	439	0-138	556	556
127.55	26°09.2'	115°23'	III-16	1550	1604	425	0-143	188	188
127.60	25°59.2'	115°42.8'	III-16	1246	1300	428	0-146	267	267
130.30	26°29'	113°29'	III-15	0428	0435	246	0-66	569	569
130.35	26°18'	113°48.3'	III-15	1721	1735	456	0-142	75	75
130.40	26°09'	114°07.5'	III-15	2026	2040	505	0-136	107	107
130.50	25°49'	114°46'	III-16	0211	0226	432	0-147	102	102
130.60	25°29'	115°24'	III-16	0721	0735	455	0-139	77	77
133.25	26°04.5'	112°48'	III-14	2213	2220	262	0-67	458	458
133.30	25°54.5'	113°07.5'	III-14	1921	1936	498	0-136	337	337
133.35	25°45.3'	113°26.5'	III-14	1401	1415	439	0-142	96	96

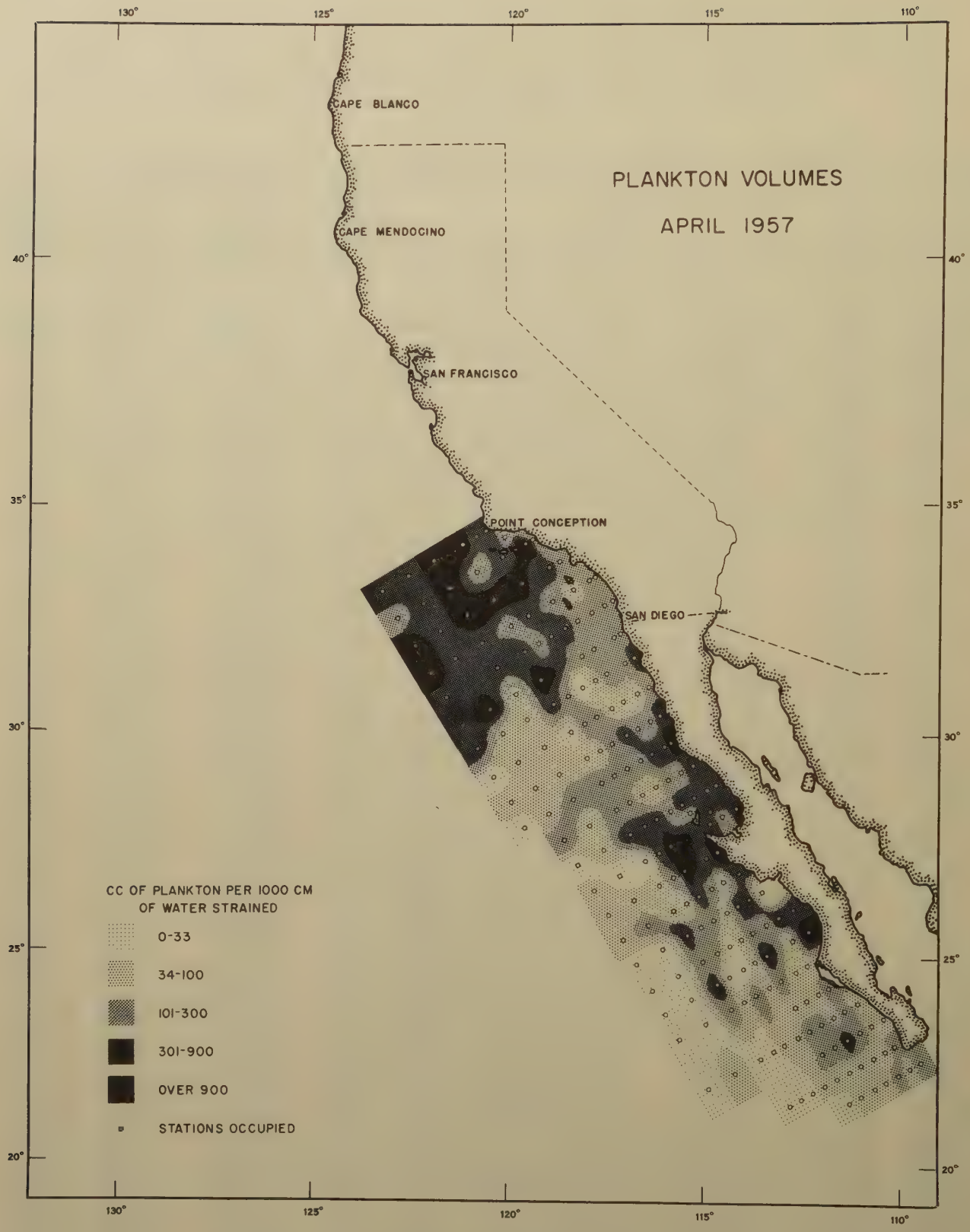

Figure 7.--Plankton volumes, April 1957

Plankton Volumes, Cruise 5703, March 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
133.40	25°33.8'	113°45.4'	III-14	1106	1120	458	0-131	44	44
133.50	25°13.2'	114°23.5'	III-14	0521	0536	440	0-143	73	73
137.23	25°34.2'	112°18.7'	III-13	0738	0745	243	0-70	288	288
137.30	25°20'	112°45.5'	III-13	1126	1140	471	0-131	191	191
137.35	25°10.2'	113°03.9'	III-13	1410	1425	488	0-142	170	170
137.40	25°03.7'	113°24.5'	III-13	1751	1805	461	0-134	139	139
137.50	24°38.5'	114°01.3'	III-13	2336	2350	450	0-142	24	24
140.30	24°45.5'	112°24'	III-12	2318	2325	251	0-68	463	463
140.35	24°36'	112°43'	III-12	2006	2020	538	0-148	119	119
140.40	24°25.5'	113°02'	III-12	1651	1705	450	0-143	36	36
140.50	24°05.5'	113°40.2'	III-12	1126	1140	467	0-135	21	21
143.26	24°19'	111°48'	III-10	2228	2235	245	0-72	318	318
143.30	24°11'	112°03'	III-11	0101	0115	436	0-145	27	27
143.35	24°01'	112°22'	III-11	2104	2120	547	0-134	183	183
143.40	23°51'	112°40.5'	III-12	0031	0045	472	0-145	51	51
143.50	23°31.6'	113°18'	III-12	0556	0610	450	0-141	13	13
147.20	23°56'	111°03.5'	III-10	1551	1603	386	0-121	104	104
147.25	23°46.5'	111°22.5'	III-10	1306	1320	536	0-139	95	95
147.30	23°36'	111°41.5'	III-10	1011	1025	472	0-137	74	74
147.40	23°12.3'	112°16.5'	III-10	0506	0520	476	0-143	80	80
150.19	23°23.7'	110°39'	III-9	1316	1330	553	0-128	51	51
150.25	23°12'	111°01.5'	III-9	1641	1655	528	0-148	47	47
150.30	23°02'	111°20'	III-9	1921	1935	539	0-136	102	102
150.40	22°42'	111°57.2'	III-10	0011	0025	666	0-140	54	54

Plankton Volumes, Cruise 5704, April 1957

80.51	34°26.5'	120°32.5'	IV-11	0713	0722	300	0-86	1655	834
80.55	34°18.5'	120°49'	IV-11	1021	1035	601	0-112	529	356
80.60	34°09'	121°09'	IV-11	1356	1410	522	0-126	1585	1585
80.70	33°42.3'	121°55'	IV-11	1926	1941	445	0-144	3863	3863
80.80	33°26.5'	122°32.8'	IV-11	2356	0010	562	0-129	1082	441
80.90	33°10'	123°13'	IV-12	0416	0430	470	0-136	545	545
82.47	34°15'	119°58'	IV-13	0736	0750	501	0-135	176	176
83.40	34°14'	119°22'	IV-13	1201	1203	66	0-13	241	241
83.43	34°08'	119°35.5'	IV-13	1041	1056	612	0-101	981	981
83.51	33°52'	120°08.5'	IV-13	0251	0306	527	0-127	387	387
83.60	33°34'	120°45'	IV-12	2251	2305	573	0-107	956	223
83.70	33°12.4'	121°27.5'	IV-12	1721	1735	501	0-124	1138	1094
83.80	32°59.8'	122°07'	IV-12	1306	1321	561	0-122	394	341
83.90	32°37.8'	122°47.4'	IV-12	0826	0840	512	0-120	223	223
86.46	33°36.5'	119°29'	IV-13	2321	2336	515	0-127	571	412
87.36	33°48'	118°41.7'	IV-13	1640	1656	539	0-112	167	167
87.40	33°40'	118°58.5'	IV-13	1940	1954	485	0-118	343	343

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
87.50	33°20'	119°40'	IV-14	0143	0150	196	0-67	3846	3846
87.60	33°00'	120°21'	IV-14	0636	0651	435	0-130	1270	1270
87.70	32°35.8'	120°59'	IV-14	1115	1129	444	0-126	2251	2251
87.80	32°19.5'	121°45.2'	IV-14	1556	1610	435	0-139	810	810
87.90	31°59'	122°27'	IV-14	1946	2000	489	0-123	1669	1669
90.28	33°27.7'	117°46.4'	IV-17	1211	1226	514	0-122	194	194
90.30	33°24.5'	117°55'	IV-17	1114	1129	557	0-109	101	101
90.37	33°11.2'	118°23.2'	IV-16	0651	0706	446	0-138	92	92
90.45	32°54.5'	118°56'	IV-16	0100	0114	434	0-143	300	300
90.55	32°32.4'	119°35.5'	IV-15	1945	1956	420	0-142	362	362
90.60	32°22.7'	120°00'	IV-15	1641	1656	462	0-135	1105	173
90.70	32°03.5'	120°40'	IV-15	1121	1136	465	0-135	379	357
90.80	31°45.5'	121°25.5'	IV-15	0540	0554	440	0-136	500	375
90.90	31°25.5'	122°03'	IV-15	0101	0115	448	0-148	1255	1255
93.27	32°56'	117°19.2'	IV-18	1436	1444	282	0-89	213	213
93.30	32°49'	117°32.5'	IV-18	1721	1735	439	0-150	137	137
93.35	32°44'	117°43.6'	IV-18	1856	1910	400	0-147	225	225
93.40	32°30'	118°12.5'	IV-19	0001	0016	492	0-123	264	264
93.45	32°20'	118°33'	IV-19	0256	0310	449	0-139	517	517
93.50	32°07'	118°55'	IV-19	0641	0656	400	0-149	512	512
93.55	31°55'	119°18'	IV-19	0901	0916	503	0-121	686	179
93.60	31°43.2'	119°40'	IV-19	1301	1316	473	0-135	495	495
93.70	31°29'	120°14'	IV-19	1726	1740	482	0-132	7519	585
93.80			Occupied. Sample lost						
93.90	30°49.5'	121°32'	IV-20	0221	0236	690	0-110	510	510
97.30	32°15.2'	117°08.7'	IV-21	1729	1734	234	0-36	137	137
97.32	32°11.5'	117°16.2'	IV-21	1526	1540	442	0-125	163	163
97.40	31°59'	117°47'	IV-21	1126	1141	427	0-129	112	112
97.45	31°47'	118°10'	IV-21	0916	0930	434	0-133	267	267
97.50			Occupied. Sample spoiled						
97.55			Occupied. Sample lost						
97.60	31°14'	119°08'	IV-20	2315	2329	633	0-101	950	950
97.70	30°53'	119°49'	IV-20	1720	1734	467	0-132	45	45
97.80	30°37.5'	120°31'	IV-20	1056	1111	524	0-123	1236	1236
97.90	30°17'	121°08'	IV-20	0720	0734	381	0-146	677	677
100.29	31°41.4'	116°43.5'	IV-21	2122	2136	430	0-113	312	312
100.33	31°35.5'	116°56.5'	IV-21	2344	2359	449	0-117	165	165
100.40	31°23'	117°29'	IV-23	1011	1025	536	0-131	121	121
100.45	31°11'	117°48'	IV-23	1311	1326	466	0-147	56	56
100.50	30°59'	118°11'	IV-23	1536	1550	460	0-144	33	33
100.55	30°50'	118°27'	IV-23	1811	1826	443	0-152	108	108
100.60	30°44'	118°47.5'	IV-23	2051	2106	525	0-127	667	667
100.70	30°26'	119°27'	IV-24	0146	0201	626	0-110	83	83

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
100.80	30°08'	120°09'	IV-24	0720	0734	443	0-151	95	95
100.90	29°50'	120°50'	IV-24	1126	1140	500	0-133	563	563
103.30	31°05.8'	116°26.3'	IV-26	0054	0059	248	0-36	194	194
103.35	30°54.7'	116°43'	IV-25	2251	2306	497	0-132	93	93
103.40	30°42'	117°00.4'	IV-25	1940	1954	504	0-142	64	64
103.45	30°35'	117°21'	IV-25	1640	1654	461	0-142	82	82
103.50	30°25.5'	117°44'	IV-25	1416	1431	494	0-132	188	188
103.55	30°08'	118°08'	IV-25	1004	1018	492	0-138	256	256
103.60	30°01'	118°22'	IV-25	0716	0730	446	0-152	27	27
103.70	29°45'	119°02'	IV-25	0216	0231	468	0-150	51	51
103.80	29°26.5'	119°45.5'	IV-24	2106	2121	475	0-143	38	38
103.90	29°06'	120°25'	IV-24	1636	1650	455	0-142	20	20
107.32	30°25.8'	116°11'	IV-26	0506	0520	427	0-136	384	384
107.35	30°20'	116°23'	IV-26	0736	0750	433	0-141	120	120
107.40	30°10.5'	116°43.5'	IV-26	1046	1100	443	0-147	131	131
107.45	29°59.5'	117°04.2'	IV-26	1306	1320	494	0-140	517	517
107.50	29°49.8'	117°25.3'	IV-26	1615	1629	448	0-153	286	286
107.55	29°40.5'	117°46.2'	IV-26	1835	1850	452	0-144	71	71
107.60	29°33'	118°02'	IV-26	2110	2124	426	0-149	85	85
107.70	29°14'	118°42'	IV-27	0151	0206	547	0-119	80	80
107.80	28°54'	119°23'	IV-27	0631	0646	432	0-144	46	46
107.90	28°36'	120°00'	IV-27	1026	1040	486	0-137	37	37
110.33	29°48'	115°51.8'	IV-28	2315	2322	243	0-65	2086	2086
110.35	29°44.7'	115°57.3'	IV-28	2220	2234	457	0-144	510	510
110.40	29°36.5'	116°19.6'	IV-28	1921	1935	414	0-146	329	329
110.45	29°26'	116°37'	IV-28	1611	1626	462	0-138	273	273
110.50	29°05.5'	117°01'	IV-28	1256	1310	473	0-136	116	116
110.55	28°58'	117°22.5'	IV-28	0936	0950	459	0-136	200	200
110.60	28°52'	117°43'	IV-28	0706	0720	395	0-153	127	127
110.70	28°35.5'	118°20'	IV-28	0151	0206	440	0-145	173	173
110.80	28°17'	118°57.5'	IV-27	2110	2124	445	0-149	52	52
110.90	27°57'	119°37'	IV-27	1556	1610	433	0-145	23	23
113.30	29°21.5'	115°18.2'	IV-29	0326	0331	228	0-39	325	325
113.35	29°12'	115°39'	IV-29	0621	0635	385	0-152	249	249
113.40	29°02.3'	115°58.5'	IV-29	0911	0925	451	0-136	111	111
113.45	28°52'	116°17.8'	IV-29	1116	1130	483	0-136	41	41
113.50	28°43'	116°37'	IV-29	1406	1420	560	0-117	62	62
113.55	28°33'	116°57'	IV-29	1611	1626	455	0-144	132	132
113.60	28°25'	117°15'	IV-29	1906	1920	423	0-150	137	137
113.70	28°07'	117°57.5'	IV-29	1551	1608	500	0-126	72	72
113.80	27°47'	118°35.5'	IV-29	1136	1150	432	0-127	190	190
117.26	28°55'	114°43'	IV-28	0033	0040	194	0-55	444	444
117.30	28°48.5'	114°57.6'	IV-28	0203	0212	203	0-78	393	393

Plankton Volumes, Cruise 5704, April 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
117.35	28°37'	115°16'	IV-28	0421	0435	535	0-101	504	504
117.40	28°28.2'	115°38'	IV-28	1021	1036	498	0-129	757	757
117.45	28°18'	115°56.2'	IV-28	1236	1251	485	0-138	132	132
117.50	28°08'	116°14'	IV-28	1556	1610	471	0-128	565	565
117.55	27°57'	116°34.8'	IV-28	1811	1826	443	0-138	716	716
117.60	27°46.8'	116°55'	IV-28	2126	2140	493	0-130	371	371
117.70	27°26.5'	117°36.5'	IV-29	0236	0251	460	0-123	70	70
117.80	27°07'	118°12.5'	IV-29	0636	0650	482	0-117	33	33
118.39	28°16.8'	115°25.2'	IV-28	0726	0740	530	0-114	166	166
119.33	28°18.8'	114°53'	IV-27	1243	1252	258	0-80	554	554
120.25	28°23'	114°15'	IV-27	2014	2017	83	0-20	313	313
120.30	28°12.1'	114°32'	IV-27	1753	1800	253	0-54	202	202
120.35	28°03'	114°54'	IV-27	1433	1440	259	0-49	505	505
120.50	27°33.8'	115°51'	IV-26	2106	2120	442	0-128	1159	1159
120.55	27°25'	116°12'	IV-26	1756	1810	449	0-119	668	615
120.60	27°17'	116°32'	IV-26	1441	1456	426	0-142	24	24
120.70	27°01'	117°06.4'	IV-26	1026	1040	515	0-126	33	33
120.80	26°38.2'	117°44'	IV-26	0526	0540	430	0-131	79	79
123.37	27°23.5'	114°40.5'	IV-25	0144	0149	148	0-44	975	975
123.42	27°14'	115°00.5'	IV-25	0441	0456	437	0-126	384	384
123.50	26°57.5'	115°32.2'	IV-25	0836	0910	474	0-118	1433	1433
123.55	26°49'	115°49'	IV-25	1046	1100	493	0-128	144	144
123.60	26°39.2'	116°09'	IV-25	1341	1356	454	0-138	35	35
123.70	26°19'	116°47'	IV-25	1911	1930	593	0-123	54	54
123.80	25°58.5'	117°26'	IV-26	0011	0026	499	0-123	40	40
127.34	26°55'	114°06'	IV-24	2038	2044	357	0-58	381	381
127.40	26°40.5'	114°29'	IV-24	1731	1745	481	0-131	83	83
127.45	26°31.5'	114°48'	IV-24	1416	1430	439	0-133	201	201
127.50	26°22.5'	115°08'	IV-24	1206	1220	497	0-131	469	469
127.55	26°12.4'	115°27.1'	IV-24	0831	0845	459	0-137	37	37
127.60	26°03.5'	115°46'	IV-24	0611	0625	456	0-137	35	35
127.70	25°44'	116°25'	IV-24	0036	0051	450	0-137	129	129
127.80	25°25'	117°02'	IV-23	1956	2010	470	0-129	64	64
130.30	26°29.5'	113°28.2'	IV-22	1139	1143	190	0-33	32	32
130.35	26°19'	113°47'	IV-22	1421	1435	521	0-109	307	307
130.40	26°07'	114°08'	IV-22	1756	1810	457	0-129	393	393
130.45	25°57'	114°26.5'	IV-22	2006	2020	433	0-128	65	65
130.50	25°46'	114°47.5'	IV-22	2341	2356	424	0-130	165	165
130.55	25°35'	115°10'	IV-23	0201	0215	436	0-143	241	241
130.60	25°25'	115°30'	IV-23	0526	0540	444	0-136	313	313
130.70	25°07'	116°04.2'	IV-23	0951	1005	479	0-120	25	25
130.80	24°49'	116°39'	IV-23	1426	1440	450	0-129	22	22
133.25	26°04'	112°49'	IV-21	1333	1340	248	0-62	380	380

Plankton Volumes, Cruise 5704, April 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
133.30	25°52.3'	113°07.5'	IV-21	1116	1130	484	0-117	495	495
133.35	25°43'	113°28'	IV-21	0806	0820	456	0-136	180	180
133.40	25°38'	113°40'	IV-21	0626	0640	456	0-135	184	184
133.45	25°27'	114°01'	IV-21	0311	0326	467	0-130	43	43
133.50	25°15.2'	114°22'	IV-21	0056	0110	444	0-141	25	25
133.55	25°03.8'	114°42.5'	IV-20	2106	2120	433	0-125	300	300
133.60	24°51'	115°05'	IV-20	1826	1840	498	0-109	281	281
133.70	24°40.5'	115°38'	IV-20	1316	1330	448	0-130	31	31
133.80	24°11'	116°30'	IV-20	0711	0726	558	0-120	22	22
137.23	25°33'	112°19.5'	IV-18	2039	2044	214	0-35	936	936
137.30	25°19'	112°48'	IV-19	0023	0031	224	0-74	89	89
137.40	24°57.5'	113°29'	IV-19	0551	0606	488	0-116	367	367
137.45	24°46.4'	113°49'	IV-19	0736	0750	493	0-118	81	81
137.50	24°40'	114°02'	IV-19	1016	1031	455	0-133	26	26
137.55	24°30'	114°21'	IV-19	1226	1240	466	0-135	21	21
137.60	24°19'	114°42'	IV-19	1622	1635	483	0-134	363	363
137.70	23°59'	115°21.5'	IV-19	2116	2130	415	0-130	29	29
137.80	23°39'	116°00.5'	IV-20	0201	0216	456	0-146	20	20
140.30	24°45'	112°24.5'	IV-18	1449	1456	287	0-67	42	42
140.35	24°37'	112°47'	IV-18	1211	1226	502	0-127	70	70
140.40	24°27'	113°04'	IV-18	0911	0926	564	0-115	169	169
140.45	24°17'	113°22'	IV-18	0526	0541	547	0-125	44	44
140.50	24°07.5'	113°40.5'	IV-18	0301	0315	453	0-114	141	141
140.55	23°57.5'	113°59'	IV-17	2256	2311	486	0-124	62	62
140.60	23°48'	114°18.5'	IV-17	2031	2046	428	0-128	112	112
140.70	23°26'	114°55'	IV-17	1456	1511	495	0-142	20	20
140.80	23°04'	115°33.8'	IV-17	0906	0920	456	0-113	15	15
143.26	24°24'	111°48.1'	IV-15	0418	0425	254	0-66	196	196
143.30	24°11'	112°03.2'	IV-15	0626	0641	531	0-131	40	40
143.35	24°00.5'	112°21.8'	IV-15	0901	0916	503	0-127	80	80
143.40	23°50.8'	112°41.2'	IV-15	1141	1155	459	0-131	89	89
147.20	23°56'	111°03.5'	IV-14	1937	1948	352	0-105	74	74
147.25	23°45.5'	111°22.8'	IV-14	2321	2336	376	0-108	173	173
147.30	23°34'	111°42'	IV-15	1756	1810	448	0-134	76	76
147.35	23°23'	112°02'	IV-15	2126	2140	477	0-136	210	210
147.40	23°12'	112°22'	IV-16	0051	0106	505	0-124	117	117
147.45	23°01'	112°41'	IV-16	0311	0326	544	0-141	81	81
147.50	22°48'	113°03'	IV-16	0641	0656	476	0-144	42	42
147.55	22°44.5'	113°18'	IV-16	0826	0840	424	0-145	33	33
147.60	22°38'	113°33'	IV-16	1056	1110	491	0-119	26	26
147.70	22°17'	114°12'	IV-16	1646	1701	470	0-132	68	68
147.80	21°54'	114°49'	IV-16	2211	2225	472	0-136	30	30
150.16	23°30'	110°27.5'	IV-5	1316	1330	488	0-141	64	64

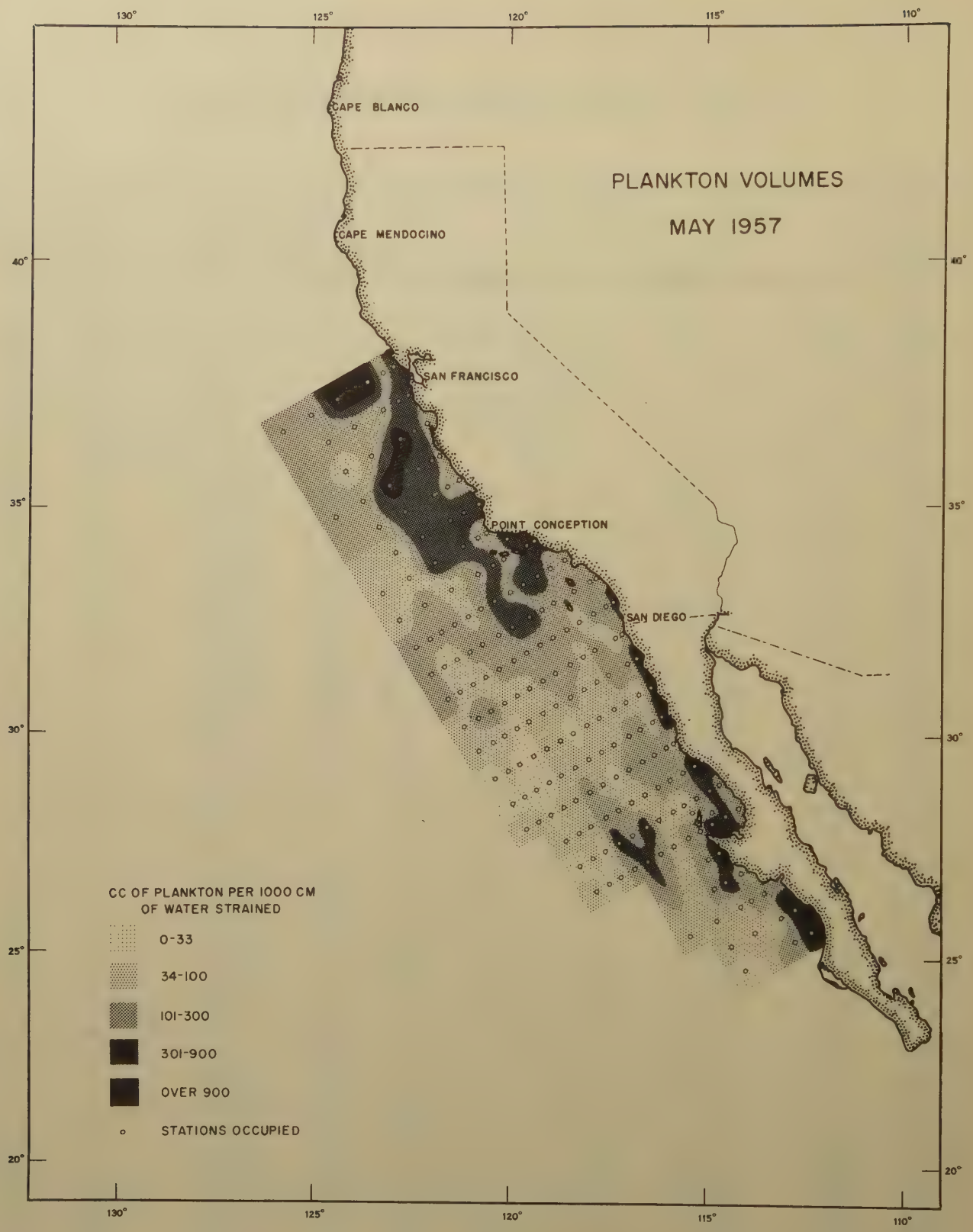

Figure 8.--Plankton volumes, May 1957

Plankton Volumes, Cruise 5704, April 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water	Depth of	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	strained C.M.	haul in meters	Total cc.	Sm.org. cc.
150.20	23°22'	110°43'	IV-5	1511	1525	496	0-147	40	40
150.25	23°12'	111°01.5'	IV-5	1811	1825	533	0-143	131	131
150.30	23°02'	111°20'	IV-5	2048	2102	471	0-135	673	673
150.35	22°52'	111°38.7'	IV-5	2334	2348	498	0-138	147	136
150.40	22°42'	111°57.5'	IV-6	0216	0230	442	0-143	254	254
153.16	22°54'	110°07'	IV-14	1126	1141	512	0-126	160	160
153.20	22°45'	110°23'	IV-14	0836	0850	412	0-136	66	66
153.25	22°35.5'	110°42'	IV-14	0456	0513	605	0-131	36	36
153.30	22°25.5'	111°01'	IV-14	0231	0248	480	0-149	96	96
153.35	22°15.6'	111°20'	IV-13	2301	2316	471	0-113	68	68
153.40	22°06'	111°40'	IV-13	2021	2036	596	0-115	64	64
153.45	21°56'	111°57'	IV-13	1641	1656	491	0-134	43	43
153.50	21°46'	112°12.7'	IV-13	1441	1456	443	0-132	23	23
153.55	21°31'	112°35'	IV-13	1046	1100	493	0-125	12	12
153.60	21°23'	112°46'	IV-13	0856	0910	536	0-115	22	22
157.10	22°29'	109°25'	IV-7	0231	0246	484	0-142	103	103
157.15	22°20'	109°43'	IV-7	0001	0015	494	0-138	65	65
157.20	22°11.5'	110°01'	IV-6	2116	2131	504	0-138	147	147
157.25	22°03'	110°19'	IV-6	1841	1856	495	0-142	393	83
157.30	21°52.5'	110°37.5'	IV-6	1616	1630	506	0-138	71	71
157.35	21°42.5'	110°56'	IV-6	1346	1400	517	0-139	52	52
157.40	21°32.5'	111°14.5'	IV-6	1106	1121	490	0-137	24	24

Plankton Volumes, Cruise 5705, May 1957

60.50	37°57.5'	122°53.2'	V-16	1004	1008	76	0-35	842	711
60.55	37°47.5'	123°15'	V-16	1307	1317	218	0-105	257	257
60.60	37°37'	123°37'	V-16	1551	1606	299	0-141	1768	1768
60.70	37°17'	124°21'	V-16	2106	2120	306	0-138	1139	1139
60.80	36°57'	125°04'	V-17	0221	0235	332	0-139	193	193
60.90	36°37'	125°47'	V-17	0747	0801	330	0-144	373	115
63.52	37°19'	122°36.2'	V-16	0418	0426	161	0-70	384	384
63.55	37°11.2'	122°49.7'	V-16	0156	0210	353	0-149	351	351
63.60	37°02.5'	123°11.7'	V-15	2201	2216	407	0-135	624	273
63.70	36°42.5'	123°55.5'	V-15	1616	1631	383	0-138	110	110
63.80	36°22.5'	124°38.5'	V-15	1121	1136	369	0-143	111	111
67.50	36°49'	122°04.6'	V-14	1252	1302	297	0-85	158	158
67.55	36°39'	122°26'	V-14	1531	1546	403	0-139	325	325
67.60	36°29'	122°47.5'	V-14	1836	1850	382	0-134	1363	1363
67.70	36°09'	123°31.7'	V-15	0001	0016	351	0-145	236	191
67.80	35°49.3'	124°13.7'	V-15	0551	0605	360	0-144	86	86
70.52	36°08.5'	121°49.8'	V-14	0742	0756	393	0-138	305	280

Plankton Volumes, Cruise 5705, May 1957 (cont'd)

Position			Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
70.55	36°03'	122°02'	V-14	0507	0520	320	0-139	372	372
70.60	35°53'	122°23'	V-14	0227	0241	321	0-138	424	393
70.70	35°33'	123°06'	V-13	2201	2216	320	0-142	901	901
70.80	35°13'	123°48'	V-13	1721	1736	403	0-140	149	124
70.90	34°53'	124°30'	V-13	1235	1251	424	0-140	160	160
73.50	35°37'	121°16.6'	V-12	1402	1411	274	0-83	292	208
73.55	35°27.5'	121°37.2'	V-12	1641	1656	445	0-138	1039	252
73.60	35°18'	121°58.4'	V-12	1936	1950	315	0-144	622	457
73.70	34°58.2'	122°39.8'	V-13	0047	0101	332	0-137	503	503
73.80	34°38.2'	123°21.7'	V-13	0606	0621	364	0-142	110	110
77.50	35°04'	120°52'	V-12	0842	0854	345	0-114	551	319
77.55	34°52.7'	121°12.4'	V-12	0541	0556	366	0-138	851	306
77.60	34°42.6'	121°34.8'	V-12	0236	0251	342	0-138	599	573
77.70	34°24.2'	122°16'	V-11	2120	2136	385	0-143	745	447
77.80	34°04.2'	122°57'	V-11	1631	1646	390	0-144	85	85
80.51	34°26.5'	120°32'	V-9	1558	1606	283	0-72	194	194
80.55	34°19'	120°47'	V-9	1345	1359	509	0-137	206	206
80.60	34°10'	121°12'	V-9	1041	1056	476	0-140	445	445
80.70	33°49'	121°51'	V-10	2206	2220	395	0-141	526	526
80.80	33°29.5'	122°27.8'	V-11	0321	0336	433	0-140	95	95
80.90	33°09'	123°13'	V-11	0931	0945	402	0-146	70	70
82.47	34°14'	119°55.5'	V-10	0140	0155	543	0-126	350	350
83.40	34°14'	119°23'	V-9	2200	2201	53	0-15	379	379
83.43	34°13'	119°34'	V-9	2302	2316	501	0-126	323	307
83.51	33°51.5'	120°08'	V-10	0507	0518	338	0-117	414	237
83.55	33°44'	120°24.3'	V-10	0726	0740	379	0-129	422	422
83.60	33°33.5'	120°45.5'	V-10	0936	0950	466	0-135	185	185
83.70	33°14.5'	121°26'	V-10	1621	1636	456	0-139	44	44
83.80	32°54.5'	122°07.5'	V-10	1126	1141	478	0-136	111	111
83.90	32°34.5'	122°48'	V-10	0556	0610	429	0-141	47	47
87.36	33°49.5'	118°45'	V-11	0421	0436	450	0-133	249	222
87.40	33°39'	118°58'	V-11	0156	0211	522	0-114	259	259
87.45	33°29.5'	119°18.5'	V-10	2133	2147	404	0-141	547	547
87.50	33°20'	119°38.5'	V-10	1903	1910	215	0-39	502	502
87.55	33°08'	119°58.2'	V-10	1636	1650	444	0-145	486	176
87.60	33°00'	120°19.5'	V-10	1346	1401	473	0-129	566	566
87.65	32°50'	120°41.5'	V-9	0912	0926	474	0-137	175	175
87.70	32°39.5'	121°02'	V-9	1227	1241	431	0-141	65	65
87.75	32°29.5'	121°22.5'	V-9	1527	1541	432	0-145	155	155
87.80	32°18'	121°45.5'	V-9	1851	1906	450	0-139	111	111
87.85	32°10'	122°03.5'	V-9	2101	2115	502	0-140	135	135
87.90	31°59'	122°24'	V-10	0016	0030	421	0-145	112	112
90.28	33°28'	117°46.5'	V-11	0938	0947	301	0-81	136	136

Plankton Volumes, Cruise 5705, May 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
90.30	33°24.5'	117°55'	V-11	1041	1056	510	0-96	286	286
90.37	33°11'	118°24.5'	V-12	0932	0946	458	0-145	338	131
90.45	32°55'	118°56'	V-12	1306	1320	495	0-134	279	279
90.50	32°45'	119°16.5'	V-12	1546	1600	482	0-134	120	120
90.55	32°35'	119°37'	V-12	1808	1822	478	0-138	485	485
90.60	32°23'	119°58'	V-12	2016	2030	428	0-146	686	570
90.65	32°12.5'	120°20'	V-12	2256	2310	522	0-122	199	199
90.70	32°02'	120°43'	V-13	0111	0125	443	0-146	111	111
90.75	31°51'	121°03.5'	V-13	0351	0406	442	0-144	179	179
90.80	31°41'	121°22'	V-13	0612	0626	498	0-128	3107	92
90.85	31°35'	121°38.5'	V-13	0816	0830	502	0-123	52	52
90.90	31°26'	121°58'	V-13	1036	1050	472	0-143	106	106
93.27	32°56'	117°19.5'	V-14	2210	2224	516	0-116	357	357
93.30	32°47.5'	117°31'	V-14	2011	2026	543	0-110	151	151
93.35	32°39.5'	117°52.5'	V-14	1801	1815	548	0-114	108	108
93.40	32°28'	118°12'	V-14	1521	1536	486	0-131	74	74
93.45	32°20.5'	118°26.5'	V-14	1325	1340	492	0-130	120	120
93.50	32°08'	118°52.5'	V-14	1048	1102	373	0-170	145	145
93.55	31°58.5'	119°13'	V-14	0741	0756	471	0-136	217	217
93.60	31°43'	119°38.5'	V-14	0421	0436	449	0-139	205	205
93.65	31°35.5'	119°56'	V-14	0211	0226	491	0-126	200	200
93.70	31°26'	120°16'	V-13	2334	2349	480	0-130	225	192
93.75	31°19'	120°34'	V-13	2126	2140	492	0-132	47	47
93.80	31°13.5'	120°53'	V-13	1926	1940	502	0-136	100	100
93.85	31°03'	121°15'	V-13	1705	1720	434	0-150	76	76
93.90	30°53'	121°37'	V-13	1445	1500	473	0-142	112	112
97.30	32°15.5'	117°08.5'	V-15	0418	0426	309	0-69	220	220
97.32	32°11.5'	117°16.5'	V-15	0516	0530	434	0-139	186	71
97.40	31°55'	117°50'	V-15	0901	0916	569	0-111	106	106
97.45	31°44'	118°11.5'	V-15	1125	1140	492	0-128	67	67
97.50	31°37'	118°30'	V-15	1336	1351	479	0-137	111	111
97.55	31°27'	118°51'	V-15	1711	1725	445	0-144	130	130
97.60	31°19'	119°11'	V-15	1920	1934	397	0-155	116	116
97.65	31°06'	119°32'	V-15	2221	2236	483	0-140	77	77
97.70	30°57'	119°52.5'	V-16	0046	0101	529	0-125	57	57
97.75	30°47.5'	120°14'	V-16	0336	0350	451	0-151	62	62
97.80	30°38.5'	120°34.5'	V-16	0603	0618	432	0-150	146	146
97.85	30°25.5'	120°50'	V-16	0820	0835	463	0-138	132	132
97.90	30°14'	121°09'	V-16	1056	1111	566	0-107	81	81
100.29	31°42'	116°43.5'	V-18	0116	0130	502	0-113	305	305
100.33	31°34'	116°54'	V-17	2306	2320	544	0-116	123	123
100.40	31°19.5'	117°24.5'	V-17	1845	1900	419	0-155	117	117
100.45	31°10'	117°46'	V-17	1528	1542	472	0-134	47	47

Plankton Volumes, Cruise 5705, May 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
								Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	cc.	cc.
100.50	31°00'	118°01'	V-17	1306	1321	517	0-124	66	66
100.55	30°48'	118°25'	V-17	1001	1016	512	0-117	105	105
100.60	30°38.5'	118°46'	V-17	0718	0732	468	0-139	90	90
100.65	30°29'	119°06.5'	V-17	0440	0454	460	0-139	70	70
100.70	30°19'	119°26'	V-17	0211	0226	435	0-149	62	62
100.75	30°10'	119°46'	V-16	2306	2320	544	0-124	33	33
100.80	30°00'	120°06'	V-16	2022	2036	542	0-118	52	52
100.85	29°50'	120°26.5'	V-16	1742	1756	437	0-149	64	64
100.90	29°40.5'	120°47.5'	V-16	1511	1526	463	0-148	43	43
103.30	31°05.1'	116°25.5'	V-19	2133	2141	313	0-71	303	303
103.35	30°57'	116°45'	V-20	0006	0020	434	0-142	92	92
103.40	30°48'	117°02'	V-20	0221	0236	425	0-146	49	49
103.45	30°38'	117°21'	V-20	0446	0501	528	0-135	76	76
103.50	30°26.5'	117°45'	V-20	0821	0838	551	0-143	73	73
103.55	30°16.3'	118°05'	V-20	1131	1146	402	0-144	35	35
103.60	30°08'	118°22'	V-20	1421	1436	395	0-137	28	28
103.65	29°57'	118°45'	V-20	1716	1731	504	0-134	77	77
103.70	29°46'	119°05'	V-20	1951	2006	450	0-145	53	53
103.75	29°36'	119°24'	V-20	2226	2241	482	0-141	25	25
103.80	29°27'	119°44'	V-21	0101	0116	395	0-136	33	33
103.85	29°17'	120°04'	V-21	0330	0346	548	0-133	44	44
103.90	29°07'	120°23'	V-21	0556	0611	513	0-139	33	33
107.32	30°27.8'	116°12'	V-22	1946	2001	592	0-137	3336	3336
107.35	30°20'	116°23'	V-22	1801	1816	654	0-138	55	55
107.40	30°13'	116°43'	V-22	1456	1510	595	0-134	133	133
107.45	30°04'	117°04'	V-22	1216	1231	453	0-137	289	181
107.50	29°51'	117°22'	V-22	0916	0930	572	0-142	80	80
107.55	29°42'	117°42'	V-22	0621	0636	625	0-134	66	66
107.60	29°33'	118°02'	V-22	0326	0341	632	0-134	85	85
107.65	29°22'	118°22'	V-22	0026	0041	465	0-140	95	95
107.70	29°12'	118°41'	V-21	2126	2141	606	0-143	53	53
107.75	29°02'	119°00'	V-21	1831	1846	638	0-135	20	20
107.80	28°52'	119°20'	V-21	1546	1601	429	0-137	28	28
107.85	28°42'	119°40'	V-21	1311	1326	381	0-135	26	26
107.90	28°35'	119°58'	V-21	1026	1040	498	0-144	20	20
110.33	29°50.4'	115°52.1'	V-22	0603	0611	247	0-68	77	77
110.35	29°46.7'	115°59.4'	V-22	0436	0450	466	0-138	279	107
110.40	29°32.3'	116°20.1'	V-22	0121	0136	455	0-133	176	176
110.45	29°24'	116°37.3'	V-21	2236	2251	454	0-139	209	121
110.50	29°14.7'	116°59'	V-21	1936	1950	459	0-141	266	155
110.55	29°05.1'	117°20.1'	V-21	1701	1715	451	0-142	13	13
110.60	28°56.6'	117°38.5'	V-21	1431	1445	479	0-146	38	38
110.65	28°44.6'	117°56.2'	V-21	1201	1215	502	0-133	127	127

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
110.70	28°34'	118°18'	V-21	0916	0931	496	0-132	65	65
110.75	28°25'	118°37'	V-21	0651	0706	474	0-137	93	93
110.80	28°14.1'	118°57.1'	V-21	0426	0440	473	0-143	30	30
110.85	28°04'	119°17.1'	V-21	0201	0216	494	0-137	61	61
110.90	27°54'	119°37.8'	V-20	2326	2340	462	0-141	52	52
113.30	29°22.5'	115°18.1'	V-19	1839	1844	194	0-45	1390	1390
113.35	29°11.3'	115°38.7'	V-19	2056	2110	471	0-146	191	191
113.40	29°00.6'	115°58.4'	V-19	2311	2325	459	0-140	222	222
113.45	28°49.5'	116°19.4'	V-20	0131	0146	486	0-133	101	101
113.50	28°38.5'	116°39'	V-20	0356	0411	517	0-137	46	46
113.55	28°31.2'	116°55'	V-20	0606	0621	485	0-142	470	72
113.60	28°22'	117°15.4'	V-20	0836	0850	472	0-138	208	208
113.65	28°12'	117°38.2'	V-20	1056	1110	506	0-137	259	180
113.70	28°02.5'	117°55.8'	V-20	1306	1320	523	0-135	88	88
113.75	27°51'	118°15.4'	V-20	1521	1536	507	0-130	75	75
113.80	27°39.5'	118°33.6'	V-20	1736	1750	466	0-138	62	62
117.26	28°55.8'	114°40.8'	V-19	1418	1425	293	0-49	239	239
117.30	28°47.7'	114°56.5'	V-19	1228	1239	277	0-64	336	336
117.35	28°36.8'	115°16.3'	V-19	0941	0956	573	0-119	222	222
117.40	28°27.4'	115°35.7'	V-19	0521	0536	499	0-135	28	28
117.45	28°12.8'	116°02.5'	V-19	0151	0205	521	0-119	79	79
117.50	28°02.8'	116°21.7'	V-18	2306	2320	460	0-129	79	79
117.55	27°56.4'	116°37.5'	V-18	2036	2050	447	0-136	564	564
117.60	27°47.7'	116°55'	V-18	1816	1830	443	0-137	115	115
117.65	27°38.9'	117°11.8'	V-18	1611	1625	481	0-126	374	374
117.70	27°26.8'	117°34.3'	V-18	1331	1346	524	0-119	19	19
117.75	27°16'	117°54'	V-18	1106	1120	502	0-135	82	62
117.80	27°07'	118°12.5'	V-18	0841	0856	497	0-133	26	26
118.39	28°19'	115°23.2'	V-19	0711	0725	450	0-136	58	58
119.33	28°18.3'	114°54.5'	V-16	1653	1701	292	0-78	237	237
120.25	28°23'	114°14.5'	V-16	1324	1328	118	0-44	102	102
120.30	28°14.2'	114°33.2'	V-16	1103	1111	271	0-76	473	473
120.35	28°02.6'	114°54'	V-16	0838	0845	188	0-56	1072	1072
120.40	27°56.5'	115°13.9'	V-17	0904	0908	152	0-23	131	131
120.45	27°43'	115°33'	V-17	1120	1135	517	0-131	139	139
120.50	27°32.5'	115°52.5'	V-17	1341	1356	505	0-132	119	87
120.55	27°23'	116°11'	V-17	1601	1616	484	0-135	114	114
120.60	27°12'	116°33'	V-17	1826	1840	466	0-136	894	894
120.65	27°01.5'	116°51.8'	V-17	2056	2110	465	0-141	256	256
120.70	26°50.5'	117°12.2'	V-17	2306	2320	467	0-137	69	69
120.75	26°39.1'	117°33'	V-18	0136	0150	509	0-127	26	26
120.80	26°28.1'	117°53.7'	V-18	0401	0416	556	0-140	40	40
123.37	27°24.1'	114°40'	V-16	0259	0304	209	0-41	1533	1533

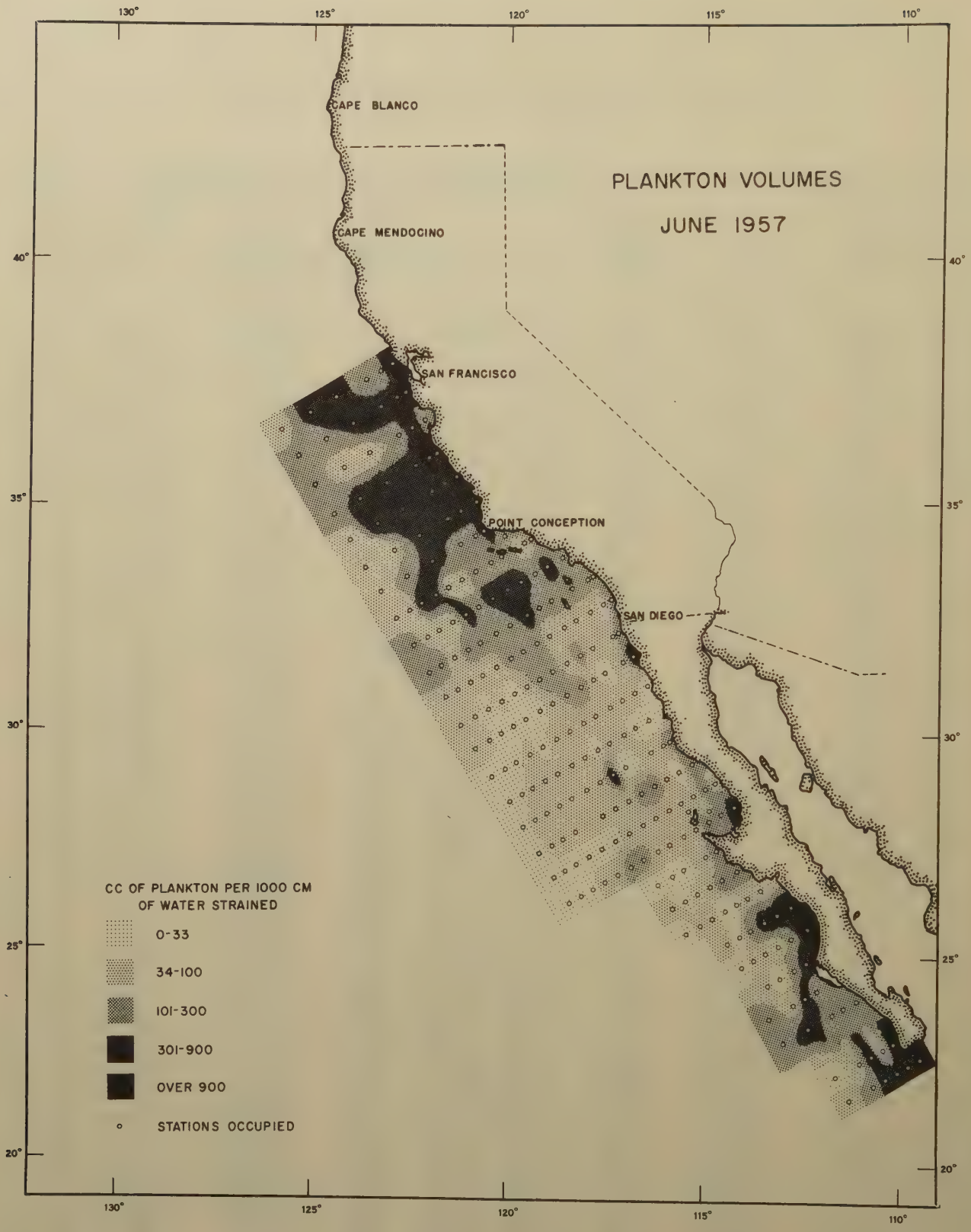

Figure 9.--Plankton volumes, June 1957

Plankton Volumes, Cruise 5705, May 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
123.42	27°12.3'	114°59.8'	V-16	0026	0040	495	0-134	162	162
127.34	26°55.2'	114°06'	V-15	1143	1150	215	0-63	195	195
127.40	26°43.1'	114°29.3'	V-15	1431	1445	479	0-131	430	430
127.45	26°32.9'	114°47.5'	V-15	1701	1715	432	0-154	148	148
130.30	26°28.5'	113°28.2'	V-14	1308	1314	225	0-66	160	160
130.35	26°16'	113°49.6'	V-14	1035	1049	537	0-130	246	246
130.40	26°05.1'	114°08.2'	V-14	0756	0810	554	0-122	76	58
130.50	25°42'	114°42.6'	V-14	0251	0305	478	0-133	92	92
130.60	25°23'	115°13.1'	V-13	2236	2250	505	0-138	59	59
133.25	25°57'	112°40.5'	V-13	0505	0513	270	0-63	1035	1035
133.30	25°47.6'	113°02.8'	V-13	0721	0736	545	0-126	92	66
133.40	25°29.2'	113°43'	V-13	1151	1206	492	0-130	57	57
133.50	25°13.2'	114°23'	V-13	1545	1600	439	0-138	68	68
137.23	25°33.5'	112°18'	V-13	0035	0041	206	0-58	1944	1944
137.30	25°20.5'	112°45'	V-12	2126	2140	469	0-131	181	107
137.40			Occupied. Sample lost						
137.50	24°40'	114°02.1'	V-12	1241	1256	510	0-124	24	24

Plankton Volumes, Cruise 5706, June 1957

60.50	37°57.5'	122°53.2'	VI-15	1228	1233	193	0-33	1387	1387
60.55	37°47.5'	123°15'	VI-15	1612	1623	334	0-101	141	141
60.60	37°37.2'	123°37.2'	VI-15	1936	1950	432	0-135	197	197
60.70	37°15.5'	124°23.8'	VI-16	0425	0441	451	0-128	567	567
60.80	36°57'	125°04'	VI-16	0851	0906	443	0-129	325	325
60.90	36°37'	125°47'	VI-16	1356	1414	374	0-150	88	88
63.52	37°19'	122°36.2'	VI-14	0628	0636	203	0-76	360	360
63.55	37°14'	122°49.5'	VI-14	0406	0421	374	0-136	476	476
63.60	37°06.7'	123°10'	VI-13	2331	2346	419	0-136	417	389
63.70	36°42'	123°56'	VI-13	1411	1426	420	0-141	404	404
63.80	36°22.3'	124°38.8'	VI-13	0706	0720	390	0-142	103	103
63.90	36°02.2'	125°21.3'	VI-13	0146	0200	396	0-143	134	134
67.50	36°49'	122°04.6'	VI-12	0052	0102	281	0-92	426	181
67.55	36°39'	122°26'	VI-12	0331	0346	430	0-137	427	427
67.60	36°29.1'	122°47.6'	VI-12	0606	0620	402	0-141	261	261
67.70	36°11.3'	123°32.5'	VI-12	1056	1111	422	0-133	85	85
67.80	35°49'	124°14'	VI-12	1541	1556	433	0-138	83	83
67.90	35°32'	124°57.2'	VI-12	2031	2046	427	0-135	122	122
70.52	36°08.5'	121°49.8'	VI-11	1911	1926	372	0-138	603	603
70.55	36°02.7'	122°02'	VI-11	1651	1706	370	0-150	1602	1602
70.60	35°53'	122°23'	VI-11	1406	1421	432	0-135	365	365
70.70	35°33'	123°06'	VI-11	0901	0916	450	0-134	854	854

Plankton Volumes, Cruise 5706, June 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
70.80	35°13'	123°48'	VI-11	0126	0140	444	0-142	496	496
70.90	34°53'	124°30'	VI-10	1936	1950	471	0-130	251	251
73.50	35°37'	121°16.6'	VI-9	1752	1802	269	0-95	632	513
73.55	35°27.7'	121°37.3'	VI-9	2001	2016	366	0-142	688	688
73.60	35°18'	121°58.4'	VI-9	2231	2246	452	0-136	708	708
73.70	34°59.3'	122°41'	VI-10	0316	0331	442	0-137	462	462
73.80	34°42.2'	123°24.7'	VI-10	0816	0830	442	0-136	579	579
73.90	34°18.2'	124°04'	VI-10	1331	1345	421	0-145	62	62
77.50	35°04'	120°52'	VI-8	2317	2328	352	0-108	398	398
77.55	34°54.5'	121°13'	VI-8	1951	2006	452	0-135	726	726
77.60	34°44'	121°34'	VI-8	1631	1646	439	0-141	407	407
77.70	34°24.2'	122°16'	VI-8	1116	1130	476	0-137	639	639
77.80	34°04.2'	122°57'	VI-8	0531	0546	482	0-137	48	48
77.90	33°44'	123°38.5'	VI-7	2356	0010	458	0-143	61	61
80.51	34°26.5'	120°32.3'	VI-6	0658	0708	240	0-76	629	317
80.55	34°19'	120°49'	VI-6	0351	0406	396	0-136	268	268
80.60	34°10.5'	121°08.5'	VI-6	0021	0036	466	0-129	206	206
80.70	33°49'	121°51'	VI-7	0656	0711	449	0-148	490	490
80.80	33°29'	122°32'	VI-7	1226	1241	449	0-143	165	165
80.90	33°09'	123°13'	VI-7	1816	1831	473	0-143	42	42
82.47	34°15'	119°58'	VI-6	1116	1131	427	0-140	262	262
83.40	34°14.5'	119°22'	VI-6	1510	1513	104	0-19	135	135
83.43	34°05.5'	119°29.5'	VI-6	1731	1746	407	0-107	443	98
83.51	33°51.8'	120°06.8'	VI-7	0753	0802	236	0-84	823	187
83.55	33°44'	120°24.3'	VI-7	1046	1101	411	0-139	134	114
83.60	33°34.5'	120°44'	VI-7	1406	1419	393	0-135	214	214
83.65	33°24.2'	121°05'	VI-7	0026	0040	452	0-143	62	62
83.70	33°14.5'	121°26'	VI-6	2041	2056	462	0-139	63	63
83.75	33°04.5'	121°46.5'	VI-6	1701	1716	522	0-136	454	454
83.80	32°54.5'	122°07.5'	VI-6	1401	1416	451	0-146	337	337
83.85	32°44.7'	122°27.2'	VI-6	1011	1026	477	0-140	40	40
83.90	32°34.5'	122°48'	VI-6	0711	0726	459	0-136	57	57
87.35	33°47.8'	118°41.8'	VI-8	1101	1116	414	0-140	393	285
87.40	33°40.5'	118°59'	VI-8	0751	0806	349	0-141	402	402
87.45	33°30'	119°19'	VI-8	0521	0536	351	0-143	180	180
87.50	33°20'	119°40'	VI-8	0203	0211	215	0-62	581	511
87.55	33°11'	120°01'	VI-7	2206	2220	456	0-129	559	362
87.60	33°00'	120°22'	VI-7	1901	1916	363	0-136	344	325
87.65	32°51.4'	120°43'	VI-5	1126	1140	490	0-136	212	212
87.70	32°39.5'	121°02'	VI-5	1431	1446	439	0-142	337	337
87.75	32°29.7'	121°22.3'	VI-5	1716	1731	480	0-141	38	38
87.80	32°19.5'	121°43'	VI-5	2016	2030	449	0-141	67	67
87.85	32°10'	122°05.7'	VI-5	2311	2326	516	0-138	62	62

Plankton Volumes, Cruise 5706, June 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
87.90	31°59'	122°29'	VI-6	0206	0220	470	0-141	106	106
90.28	33°28.3'	117°46.3'	VI-8	1641	1655	341	0-135	176	117
90.30	33°24'	117°55.3	VI-8	1756	1811	335	0-132	265	146
90.37	33°10.5'	118°23.5'	VI-8	2126	2140	439	0-140	385	175
90.45	32°55.3'	118°56'	VI-9	0156	0210	394	0-141	300	300
90.50	32°45.5'	119°17'	VI-9	0446	0501	379	0-136	177	177
90.55	32°34.8'	119°37'	VI-9	0721	0736	389	0-136	334	334
90.60	32°24.8'	119°58'	VI-9	1001	1016	443	0-139	239	239
90.65	32°15'	120°17.5'	VI-9	1251	1306	442	0-138	181	181
90.70	32°05'	120°38'	VI-9	1531	1546	443	0-139	237	237
90.75	31°55'	120°58'	VI-9	1811	1825	362	0-136	229	229
90.80	31°45'	121°18'	VI-9	2041	2056	431	0-141	91	91
90.85	31°35'	121°38.5'	VI-9	2331	2346	427	0-140	126	126
90.90	31°25'	121°59'	VI-10	0211	0226	422	0-141	147	147
93.27	32°56'	117°18.8'	VI-11	1738	1745	172	0-64	162	162
93.30	32°45.5'	117°30.5'	VI-11	1526	1541	483	0-138	29	29
93.35	32°34.2'	117°48.3'	VI-11	1316	1330	457	0-141	79	79
93.40	32°23'	118°05'	VI-11	1021	1036	448	0-138	371	51
93.45	32°10.5'	118°22'	VI-11	0746	0801	456	0-143	101	74
93.50	32°00'	118°46	VI-11	0506	0521	416	0-141	79	79
93.55	31°52'	119°07.5'	VI-11	0211	0226	435	0-143	205	205
93.60	31°43'	119°28'	VI-10	2311	2326	380	0-141	271	271
93.65	31°34'	119°50'	VI-10	2026	2041	365	0-134	230	230
93.70	31°26'	120°11'	VI-10	1741	1756	360	0-143	44	44
93.75	31°17'	120°32.5'	VI-10	1456	1511	387	0-135	77	77
93.80	31°08'	120°53'	VI-10	1221	1236	394	0-139	99	99
93.85	31°00'	121°14'	VI-10	0941	0956	395	0-141	91	91
93.90	30°50'	121°35'	VI-10	0711	0726	357	0-137	62	62
97.30	32°15.5'	117°09'	VI-12	0729	0734	148	0-48	170	170
97.32	32°11.5'	117°16.5'	VI-12	0816	0831	470	0-141	83	83
97.40	31°55'	117°49.5'	VI-12	1216	1241	473	0-142	110	97
97.45	31°45'	118°10'	VI-12	1621	1636	353	0-142	113	113
97.50	31°34'	118°29'	VI-12	1841	1855	357	0-135	76	76
97.55	31°21'	118°48'	VI-12	2251	2306	430	0-141	168	168
97.60	31°10.5'	119°07'	VI-13	0136	0151	455	0-139	105	105
97.65	30°59'	119°25'	VI-13	0431	0446	388	0-137	62	62
97.70	30°47'	119°44'	VI-13	0751	0806	434	0-140	25	25
97.75	30°35.5'	120°03.5'	VI-13	1126	1141	440	0-137	48	48
97.80	30°25'	120°23'	VI-13	1446	1501	477	0-133	29	29
97.85	30°15'	120°43'	VI-13	1751	1806	423	0-128	45	45
97.90	30°05'	121°03'	VI-13	2046	2101	448	0-136	85	85
100.29	31°42'	116°43.3'	VI-15	1417	1428	339	0-100	555	555
100.33	31°34.5'	116°58.5'	VI-15	1156	1211	476	0-142	42	42

Plankton Volumes, Cruise 5706, June 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
100.40	31°11'	117°44'	VI-15	0601	0616	354	0-138	31	31
100.45	31°02'	118°03'	VI-15	0306	0321	448	0-136	76	76
100.50	30°54'	118°20'	VI-15	0001	0016	452	0-135	108	108
100.55	30°45'	118°38'	VI-14	2056	2111	415	0-137	159	159
100.60	30°36'	118°57'	VI-14	1806	1821	414	0-129	36	36
100.65	30°27'	119°15'	VI-14	1511	1526	488	0-132	33	33
100.70	30°18'	119°34'	VI-14	1206	1221	478	0-134	21	21
100.75	30°09'	119°52'	VI-14	0911	0926	443	0-135	23	23
100.80	30°00'	120°10'	VI-14	0616	0631	383	0-135	21	21
100.85	29°50'	120°28'	VI-14	0311	0326	448	0-139	38	38
100.90	29°42'	120°46'	VI-14	0011	0026	459	0-129	72	72
103.30	31°05'	116°25'	VI-15	2238	2246	246	0-68	24	24
103.35	30°55'	116°45'	VI-16	0116	0131	480	0-141	50	50
103.40	30°45'	117°06'	VI-16	0401	0415	362	0-139	50	50
103.45	30°37'	117°25'	VI-16	0646	0701	367	0-142	161	46
103.50	30°26'	117°43'	VI-16	0936	0951	416	0-139	79	79
103.55	30°15'	118°04'	VI-16	1241	1256	425	0-139	68	68
103.60	30°05'	118°24'	VI-16	1531	1546	417	0-140	82	82
103.65	29°55'	118°43'	VI-16	1821	1836	355	0-131	76	76
103.70	29°44'	119°03'	VI-16	2111	2126	431	0-142	26	26
103.75	29°32'	119°25'	VI-17	0011	0026	424	0-145	35	35
103.80	29°20'	119°47'	VI-17	0306	0321	427	0-140	28	28
103.85	29°12'	120°02'	VI-17	0516	0531	404	0-134	15	15
103.90	29°02.5'	120°19.5'	VI-17	0756	0811	453	0-136	15	15
107.35	30°25.3'	116°32'	VI-18	1846	1901	405	0-138	32	32
107.40	30°19.5'	116°42.8'	VI-18	1631	1646	371	0-127	32	32
107.45	30°08.5'	117°05'	VI-18	1326	1340	414	0-139	41	41
107.50	30°01'	117°20'	VI-18	1036	1051	474	0-139	49	49
107.55	29°46.5'	117°45'	VI-18	0746	0801	444	0-139	32	32
107.60	29°33'	118°11'	VI-18	0426	0441	398	0-135	35	35
107.65	29°24'	118°29'	VI-18	0126	0141	424	0-139	64	64
107.70	29°14	118°46'	VI-17	2241	2256	435	0-140	83	83
107.75	29°05'	119°02'	VI-17	1956	2011	452	0-139	49	49
107.80	28°56'	119°21'	VI-17	1711	1726	376	0-134	40	40
107.85	28°46'	119°37'	VI-17	1426	1441	438	0-140	18	18
107.90	28°37'	119°55'	VI-17	1151	1206	444	0-142	16	16
110.33	29°52'	116°04.5'	VI-20	2152	2204	360	0-115	147	147
110.35	29°46.7'	116°05'	VI-20	2021	2035	454	0-141	66	66
110.40	29°37.5'	116°20'	VI-20	1756	1810	459	0-141	76	76
110.45	29°26.5'	116°40'	VI-20	1531	1555	467	0-142	31	31
110.50	29°16'	117°00'	VI-20	1306	1320	467	0-138	30	30
110.55	29°06'	117°19'	VI-20	1041	1055	507	0-132	355	355
110.60	28°58'	117°36'	VI-20	0841	0856	470	0-140	43	43

Plankton Volumes, Cruise 5706, June 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water	Depth of	Vol.per 1000 C.M.strained	
								Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	strained C.M.	haul in meters	cc.	cc.
110.65	28°47.5'	117°56'	VI-20	0616	0630	503	0-127	119	60
110.70	28°37.5'	118°20'	VI-20	0351	0406	421	0-148	83	83
110.75	28°25'	118°36.5'	VI-20	0121	0136	450	0-146	89	89
110.80	28°13.5'	118°58'	VI-19	2256	2310	460	0-136	48	48
110.85	28°02'	119°20'	VI-19	2031	2045	550	0-118	38	38
110.90	27°54'	119°34'	VI-19	1841	1856	508	0-121	16	16
113.30	29°25'	115°16'	VI-18	1219	1222	127	0-23	190	190
113.35	29°13'	115°40'	VI-18	1446	1460	482	0-130	33	33
113.40	29°03'	115°59.5'	VI-18	1706	1720	457	0-140	74	74
113.45	28°53'	116°19.5'	VI-18	1921	1935	440	0-142	155	155
113.50	28°43.5'	116°39'	VI-18	2146	2200	517	0-127	201	201
113.55	28°32.5'	116°58.5'	VI-19	0006	0021	484	0-139	74	74
113.60	28°21'	117°19'	VI-19	0226	0240	479	0-138	98	98
113.65	28°10.5'	117°38.5'	VI-19	0436	0450	522	0-125	88	40
113.70	28°00'	117°59'	VI-19	0656	0710	514	0-129	40	40
113.75	27°51.5'	118°14'	VI-19	0856	0910	504	0-128	36	36
113.80	27°44.5'	118°34'	VI-19	1101	1115	487	0-123	37	37
113.85	27°36'	118°51'	VI-19	1306	1320	481	0-141	46	46
113.90	27°26.5'	119°12'	VI-19	1516	1530	462	0-140	17	17
117.26	28°57.5'	114°47'	VI-18	0808	0815	323	0-49	55	39
117.30	28°51'	115°01'	VI-18	0613	0620	221	0-75	168	168
117.35	28°39'	115°18'	VI-18	0341	0356	519	0-127	39	39
117.40	28°28'	115°38.5'	VI-17	2246	2300	633	0-86	79	79
117.45	28°15.5'	116°01'	VI-17	1946	2000	627	0-80	62	45
117.50	28°06'	116°19'	VI-17	1721	1735	459	0-144	55	55
117.55	27°57'	116°35'	VI-17	1451	1505	499	0-129	48	48
117.60	27°45'	116°52.5'	VI-17	1221	1236	529	0-130	43	43
117.65	27°36'	117°14'	VI-17	0951	1005	522	0-124	31	31
117.70	27°27.5'	117°32.5'	VI-17	0731	0745	511	0-126	31	31
117.75	27°18'	117°52'	VI-17	0506	0520	496	0-140	24	24
117.80	27°08'	118°11.5'	VI-17	0231	0246	441	0-153	25	25
117.85	26°58'	118°30'	VI-16	2356	0010	432	0-144	30	30
117.90	26°47'	118°49.5'	VI-16	1906	1920	454	0-146	13	13
118.39	28°18.5'	115°24'	VI-18	0051	0106	521	0-126	113	100
119.33	28°21'	114°53'	VI-15	0738	0746	302	0-83	53	53
120.25	28°23.5'	114°16'	VI-15	0408	0415	215	0-54	353	353
120.30	28°09.5'	114°34'	VI-15	0148	0156	230	0-76	417	200
120.35	28°01.2'	114°54'	VI-14	2328	2335	300	0-51	233	233
120.40	27°56.5'	115°14'	VI-15	1444	1448	152	0-27	79	79
120.45	27°43'	115°33'	VI-15	1706	1720	454	0-146	66	66
120.50	27°33'	115°53'	VI-15	1936	1950	513	0-130	439	68
120.55	27°24'	116°13'	VI-15	2201	2215	534	0-121	659	97
120.60	27°14'	116°34'	VI-16	0026	0041	408	0-150	221	221

Plankton Volumes, Cruise 5706, June 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
120.65	27°03.5'	116°55.5'	VI-16	0256	0311	422	0-145	249	130
120.70	26°54'	117°16'	VI-16	0526	0540	474	0-136	42	42
120.75	26°42'	117°32'	VI-16	0731	0746	407	0-142	54	54
120.80	26°32.5'	117°48.5'	VI-16	0956	1010	531	0-122	19	19
120.85	26°23'	118°07'	VI-16	1211	1225	485	0-137	25	25
120.90	26°13'	118°27'	VI-16	1431	1446	454	0-138	22	22
123.37	27°22.5'	114°39.5'	VI-14	1743	1754	264	0-57	114	114
123.42	27°14.5'	114°57'	VI-14	1511	1526	467	0-144	56	34
123.50	27°01'	115°29'	VI-14	1151	1205	463	0-147	22	22
123.55	26°49.5'	115°46'	VI-14	0941	0955	508	0-139	18	18
123.60	26°39.5'	116°03'	VI-14	0726	0740	465	0-139	17	17
127.34	26°55.3'	114°06'	VI-13	1525	1532	267	0-58	195	195
127.40	26°43.5'	114°29.5'	VI-13	1756	1810	499	0-138	192	152
127.45	26°33.5'	114°48.7'	VI-13	2021	2035	503	0-139	60	60
127.50	26°23.5'	115°08'	VI-13	2226	2240	497	0-143	95	95
127.55	26°14.5'	115°24'	VI-14	0051	0105	570	0-132	25	25
127.60	26°05.5'	115°42'	VI-14	0311	0326	512	0-143	35	35
130.30	26°33.5'	113°27'	VI-13	1119	1124	154	0-140	58	58
130.35	26°24'	113°41'	VI-13	0923	0931	223	0-69	36	36
130.40	26°11'	114°02'	VI-13	0651	0706	454	0-142	22	22
130.45	25°59'	114°25'	VI-13	0421	0436	472	0-141	87	19
130.50	25°49'	114°46'	VI-13	0146	0201	451	0-150	107	40
130.55	25°39'	115°35'	VI-12	2316	2330	479	0-142	150	88
130.60	25°29'	115°24'	VI-12	1821	1836	470	0-143	639	30
133.25	26°00'	112°45.5'	VI-12	0053	0100	219	0-70	1277	1277
133.30	25°49.5'	113°03'	VI-12	0316	0331	440	0-150	,522	390
133.35	25°38'	113°23'	VI-12	0531	0546	534	0-127	600	540
133.40	25°33.5'	113°43.5'	VI-12	0751	0805	493	0-131	166	166
133.45	25°22.5'	114°03'	VI-12	1016	1030	549	0-115	4	4
133.50	25°13'	114°24'	VI-12	1251	1306	442	0-149	34	34
137.23	25°37'	112°22'	VI-11	2058	2105	228	0-60	4912	4912
137.30	25°22'	112°45'	VI-11	1736	1750	518	0-136	517	243
137.35	25°11'	113°04'	VI-11	1501	1516	520	0-128	102	37
137.40	24°52.5'	113°23'	VI-11	1121	1135	521	0-132	50	50
137.45	24°41'	113°46'	VI-11	0826	0840	567	0-118	42	42
137.50	24°32.5'	114°04.5'	VI-11	0541	0556	454	0-147	18	18
140.30	24°45.5'	112°24'	VI-10	1433	1443	396	0-86	505	505
140.35	24°36'	112°43'	VI-10	1701	1715	436	0-146	138	138
140.40	24°25'	113°02'	VI-10	1926	1940	500	0-139	32	32
140.50	24°04'	113°43'	VI-11	0036	0051	455	0-174	44	44
143.26			Not occupied						
143.30	24°04.5'	112°03.5'	VI-9	1151	1206	346	0-149	249	249
143.35	23°56'	112°19.5'	VI-9	0931	0946	323	0-126	359	359

Plankton Volumes, Cruise 5706, June 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
143.40	23°46.5'	112°38'	VI-9	0636	0650	388	0-146	67	67
143.50	23°28.5'	113°15'	VI-9	0136	0150	424	0-149	118	118
148.20	23°40.5'	110°56'	VI-8	0146	0201	455	0-132	110	110
148.25	23°31'	111°14.5'	VI-8	0406	0420	409	0-149	152	152
148.30	23°20'	111°34.5'	VI-8	0701	0715	423	0-147	236	236
148.40	22°58'	112°14'	VI-8	1206	1220	448	0-136	313	313
148.50	22°40.5'	112°53'	VI-8	1651	1706	445	0-147	171	171
153.16	22°55'	110°07'	VI-7	0501	0516	448	0-134	393	330
153.20	22°48'	110°22'	VI-7	0736	0750	446	0-133	175	76
153.25	22°37'	110°40'	VI-7	1121	1136	463	0-114	371	371
153.30	22°27'	110°59'	VI-7	1341	1356	406	0-138	89	89
153.40	22°04'	111°35'	VI-7	1821	1836	415	0-138	22	22
157.10	22°33'	109°24'	VI-8	1546	1600	385	0-148	385	385
157.15	22°23'	109°41'	VI-8	1321	1336	410	0-136	351	351
157.20	22°04'	109°58'	VI-8	0951	1005	447	0-124	343	343
157.25	21°55'	110°16'	VI-8	0731	0746	446	0-124	412	412
157.30	21°47'	110°33'	VI-8	0401	0416	458	0-133	336	297
157.40	21°28'	111°12'	VI-7	2306	2320	480	0-123	60	60

Plankton Volumes, Cruise 5707, July 1957

60.50			Occupied. Sample not quantitative						
60.55	37°47.3'	123°15'	VII-19	1907	1918	330	0-112	599	599
60.60	37°37'	123°37.1'	VII-19	2151	2206	439	0-143	444	444
60.70	37°16.6'	124°16.5'	VII-20	0234	0248	356	0-161	920	920
63.52	37°18.5'	122°36.5'	VII-19	1224	1232	229	0-60	5811	1223
63.55	37°12.2'	122°49.5'	VII-19	1106	1121	498	0-126	1104	402
63.60	37°02'	123°12'	VII-19	0811	0825	406	0-145	689	689
63.70	36°42.5'	123°55'	VII-19	0311	0326	401	0-151	1123	1123
63.80	36°24'	124°39'	VII-23	0856	0910	534	0-121	580	262
67.50			Occupied. Sample missing						
67.55	36°39.6'	122°28.7'	VII-18	1011	1026	437	0-139	412	412
67.60	36°28'	122°47'	VII-18	1311	1325	415	0-139	1002	1002
67.70	36°08'	123°29.6'	VII-18	0640	0654	394	0-157	180	180
67.80	35°52'	124°14.5'	VII-23	1311	1325	448	0-144	89	89
70.52	36°08.5'	121°49.8'	VII-17	0714	0728	449	0-140	263	263
70.55	36°02.5'	122°01'	VII-17	0541	0556	424	0-145	567	567
70.60	35°52.6'	122°22.4'	VII-17	0141	0156	415	0-147	347	347
70.70	35°34.5'	122°56'	VII-16	2031	2045	543	0-114	2298	2298
73.50	35°36.6'	121°17.7'	VII-16	0048	0056	264	0-63	723	515
73.55	35°29'	121°36.2'	VII-16	0346	0400	430	0-147	585	585
73.60	35°20'	121°57.5'	VII-16	0726	0740	452	0-144	292	292

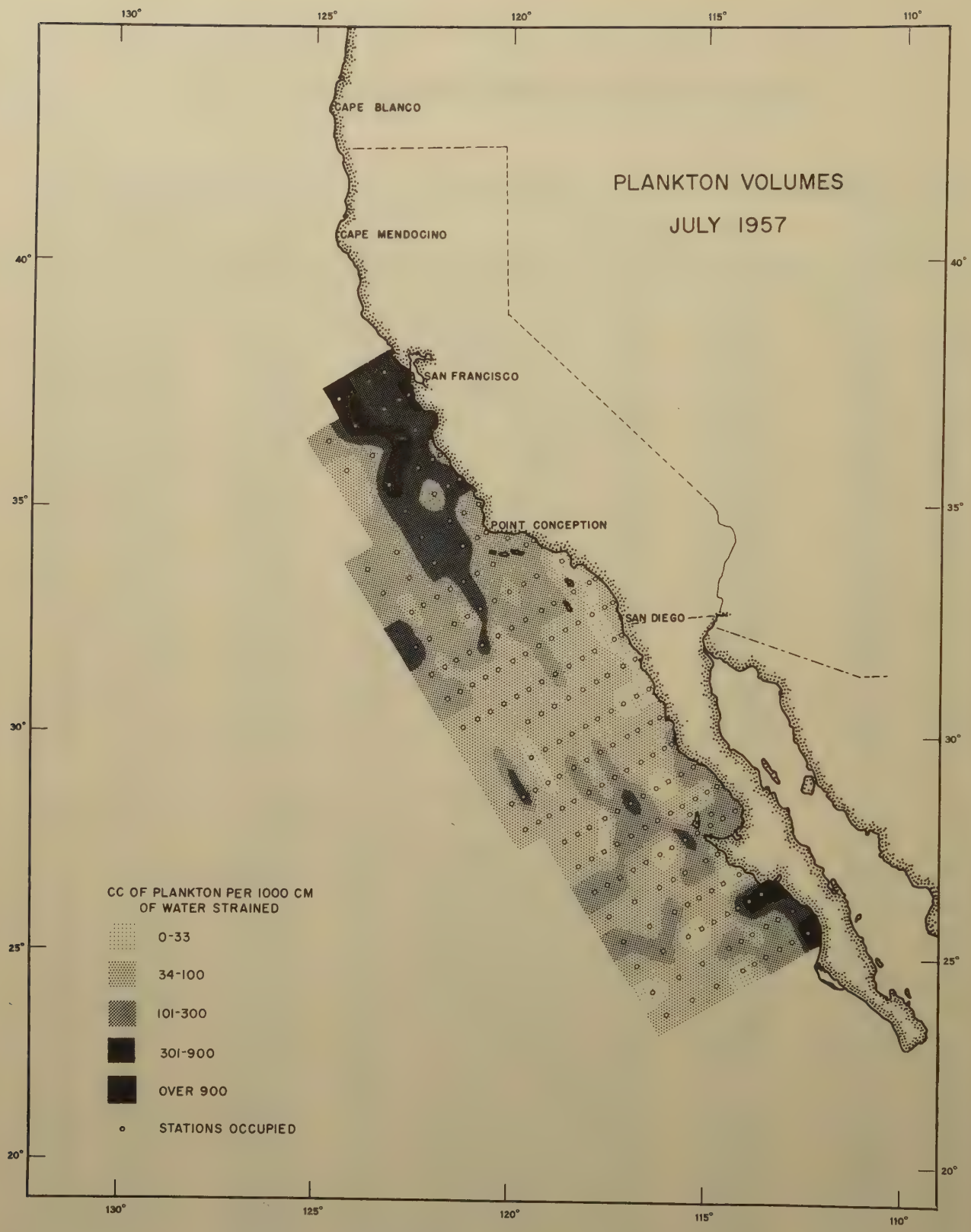

Figure 10.--Plankton volumes, July 1957

Sta.	Position N.lat.	W.long.	(1957) Date	Time (PST) Start	End	Vol. water strained C.M.	Depth of haul in meters	Vol.per 1000 C.M.strained Total cc.	Sm.org. cc.
73.70	35°03.2'	122°38'	VII-16	1251	1306	418	0-156	765	765
77.50	35°03.5'	120°51.6'	VII-15	1904	1914	289	0-95	260	260
77.55	34°55'	121°13'	VII-15	1611	1626	429	0-141	270	270
77.60	34°47'	121°32.6'	VII-15	1256	1310	400	0-143	325	325
77.70	34°24.5'	122°16'	VII-15	0726	0740	397	0-150	494	494
77.80	34°04.5'	122°56.8'	VII-15	0133	0147	413	0-150	211	211
77.90	33°14.4'	123°40.6	VII-14	2011	2026	466	0-141	172	172
80.51	34°26.5'	120°31.6'	VII-9	1513	1519	226	0-59	584	203
80.55	34°19'	120°48.3'	VII-9	1921	1936	495	0-140	297	226
80.60	34°09'	121°09.1'	VII-9	2326	2341	481	0-155	330	330
80.70	33°47'	121°49.8'	VII-14	0443	0458	404	0-151	470	470
80.80	33°26'	122°30.2'	VII-14	1016	1030	499	0-129	212	212
80.90	33°09'	123°13'	VII-14	1456	1510	492	0-134	136	136
82.47	34°15'	119°58'	VII-10	1916	1931	524	0-138	153	153
83.40	34°14'	119°22'	VII-11	0449	0452	123	0-14	203	203
83.43	34°08'	119°34'	VII-11	0201	0216	698	0-75	146	146
83.51	33°52.1'	120°07.6'	VII-10	1448	1457	332	0-80	108	108
83.55	33°47'	120°23'	VII-10	1216	1231	494	0-141	176	176
83.60	33°35'	120°45.8'	VII-10	0731	0745	524	0-140	280	280
83.65	33°24.7'	121°05.2'	VII-13	2254	2308	439	0-144	310	310
83.70	33°10.6'	121°28.5'	VII-13	1956	2010	483	0-140	182	182
83.75	33°03'	121°45'	VII-13	1651	1706	418	0-149	198	198
83.80	32°55'	122°04.5'	VII-13	1413	1427	402	0-159	122	122
83.85	32°45'	122°25'	VII-13	1111	1125	491	0-137	96	96
83.90	Occupied. No biological data taken								
87.36	33°49.8'	118°37.3'	VII-11	1046	1100	521	0-134	31	31
87.40	Occupied. Sample spoiled								
87.45	33°30.2'	119°19.2'	VII-11	1945	2000	504	0-136	242	212
87.50	33°19.8'	119°39.5'	VII-12	0233	0240	268	0-64	161	161
87.55	33°14.5'	120°02'	VII-12	0641	0655	472	0-135	136	89
87.60	33°01.8'	120°28.5'	VII-12	1056	1111	515	0-140	175	144
87.65	32°50.8'	120°43.2'	VII-9	1221	1236	422	0-143	351	351
87.70	32°42.5'	121°03.6'	VII-9	1546	1600	352	0-165	57	57
87.75	32°33.5'	121°23.1'	VII-9	1856	1910	402	0-154	129	129
87.80	Occupied. No biological data taken								
87.85	32°10.2'	122°04'	VII-10	0131	0146	411	0-144	219	219
87.90	31°57'	122°24.2'	VII-10	0501	0516	424	0-148	509	509
90.28	33°27.5'	117°46.3'	VII-16	0931	0945	670	0-140	43	43
90.30	33°24.1'	117°54.9'	VII-16	0641	0656	520	0-136	27	27
90.37	33°09'	118°27.9'	VII-15	0541	0555	543	0-132	94	94
90.45	32°54.8'	118°56.2'	VII-14	2251	2306	548	0-129	179	179
90.50	32°44.6'	119°16.8'	VII-14	1851	1905	580	0-121	314	255
90.55	32°34.5'	119°37.2'	VII-14	1341	1356	703	0-83	164	164

Plankton Volumes, Cruise 5707, July 1957 (cont'd)

Sta.	Position N.lat.	Position W.long.	(1957) Date	Time (PST) Start	Time (PST) End	Vol. water strained C.M.	Depth of haul in meters	Vol.per 1000 C.M.strained Total cc.	Vol.per 1000 C.M.strained Sm.org. cc.
90.60	32°36'	119°55.7'	VII-14	0941	0956	529	0-124	164	164
90.65	32°26.1'	120°13'	VII-14	0636	0650	502	0-131	70	70
90.70	32°12.5'	120°34'	VII-13	2331	2346	510	0-140	367	367
90.75	31°57.5'	120°59'	VII-13	1916	1930	543	0-131	225	225
90.80	31°44'	121°23.6'	VII-13	1456	1510	532	0-137	141	141
90.85	31°30.3'	121°45.6'	VII-13	1041	1055	472	0-150	57	57
90.90	31°22.6'	122°02.3'	VII-13	0511	0525	531	0-140	264	264
93.27	33°54.3'	117°18.6'	VII-16	1501	1515	613	0-130	34	34
93.30	32°49'	117°30.7'	VII-18	1421	1435	519	0-140	54	54
93.35	32°38.2'	117°52.2'	VII-18	1836	1850	519	0-135	31	31
93.40	32°30'	118°12.9'	VII-18	2151	2205	496	0-145	65	65
93.45	32°20.5'	118°36'	VII-19	0236	0250	566	0-125	67	67
93.50	32°11.1'	118°59.3'	VII-19	0611	0625	475	0-134	55	55
93.55	32°01.8'	119°18.8'	VII-19	1016	1030	481	0-144	172	172
93.60	31°51.2'	119°39.9'	VII-19	1326	1340	544	0-127	46	46
93.65	31°40'	119°59.5'	VII-19	1746	1800	565	0-126	64	64
93.70	31°29'	120°20.5'	VII-19	2106	2121	415	0-159	87	87
93.75	31°18.1'	120°40.8'	VII-20	0146	0201	417	0-149	46	46
93.80	31°07.4'	121°00.5'	VII-20	0526	0540	531	0-137	43	43
93.85	30°56'	121°21.3'	VII-20	0921	0935	495	0-141	117	117
93.90	30°49.3'	121°35'	VII-20	1211	1225	544	0-134	276	276
97.30	32°15'	117°08.1'	VII-22	1444	1449	191	0-38	58	58
97.32	32°10.2'	117°15.3'	VII-22	1251	1305	537	0-117	7	7
97.40	31°56.4'	117°45'	VII-22	0716	0730	546	0-125	60	60
97.45	31°47.8'	118°02.7'	VII-22	0416	0430	500	0-137	76	76
97.50	31°36.7'	118°24'	VII-22	2321	2335	523	0-139	92	92
97.55	31°26.5'	118°44'	VII-21	2016	2030	483	0-138	141	141
97.60	31°15.5'	119°03.9'	VII-21	1611	1625	534	0-130	84	84
97.65	31°05'	119°24.2'	VII-21	1256	1311	542	0-140	92	92
97.70	30°54'	119°43'	VII-21	0901	0915	498	0-147	56	56
97.75	30°44.8'	120°05.2'	VII-21	0541	0556	493	0-140	51	51
97.80	30°35.8'	120°26.8'	VII-21	0136	0150	510	0-141	49	49
97.85	30°25.8'	120°49.5'	VII-20	2201	2216	510	0-144	37	37
97.90	30°17.3'	121°12'	VII-20	1756	1810	546	0-137	53	35
100.29	31°42.2'	116°43.4'	VII-24	1541	1554	587	0-111	17	17
100.32	31°34.7'	116°58.7'	VII-24	1826	1840	489	0-138	65	45
100.40	31°21.2'	117°32.5'	VII-25	0046	0101	526	0-139	118	84
100.45	31°12'	117°56'	VII-25	0521	0536	487	0-139	55	55
100.50	31°02.8'	118°19.5'	VII-25	0841	0855	500	0-139	84	84
100.55	30°53.2'	118°45'	VII-25	1231	1245	524	0-136	63	63
100.60	30°40.8'	118°46.8'	VII-25	1511	1525	511	0-139	84	84
100.65	30°28'	119°06'	VII-25	1911	1925	508	0-133	47	47
100.75	30°05.2'	119°42.2'	VII-26	0116	0130	458	0-145	48	48

Plankton Volumes, Cruise 5707, July 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M. strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
103.30	31°05.2'	116°25'	VII-27	1359	1403	180	0-29	22	22
103.35	30°59.3'	116°44.7'	VII-27	1051	1105	488	0-154	14	14
103.40	30°49.3'	117°04.2'	VII-27	0706	0720	478	0-139	25	25
103.45	30°37.7'	117°23.5'	VII-27	0426	0441	487	0-138	35	35
103.50	30°24.4'	117°41.8'	VII-27	0025	0041	536	0-133	78	78
103.55	30°11.6'	118°00.7'	VII-26	2106	2120	531	0-136	68	68
103.60	29°59.5'	118°18'	VII-26	1721	1735	514	0-137	43	43
103.65	29°46.3'	118°37.9'	VII-26	1411	1425	512	0-136	66	66
103.70	29°40'	118°49.6'	VII-26	1046	1101	472	0-145	42	42
103.75	29°29.5'	119°10'	VII-26	0731	0745	524	0-138	27	27
107.32	30°26'	116°11'	VII-30	0721	0736	385	0-141	39	39
107.35	30°20'	116°23'	VII-30	0906	0920	405	0-141	59	59
107.40	30°10.5'	116°42'	VII-30	1441	1456	604	0-139	35	35
107.45	30°00.5'	117°03'	VII-30	1726	1741	433	0-139	88	88
107.50	29°50'	117°23.5'	VII-30	2026	2040	428	0-142	79	79
107.55	29°40'	117°45.5'	VII-31	0036	0051	435	0-141	154	154
107.60	29°29'	118°07.5'	VII-31	0326	0351	415	0-141	94	94
107.65	29°21'	118°22'	VII-31	0641	0656	414	0-139	128	128
107.70	29°11'	118°43'	VII-31	0926	0941	418	0-141	60	60
107.75	29°01'	119°02.5'	VII-31	1311	1326	431	0-140	30	30
107.80	28°51.5'	119°22.5'	VII-31	1611	1626	408	0-141	37	37
107.85	28°38'	119°42'	VII-31	1941	1956	408	0-142	657	657
107.90	28°30'	120°00'	VII-31	2221	2236	412	0-140	80	80
110.33	29°50'	115°52'	VIII-3	0618	0627	252	0-85	231	231
110.35	29°49'	116°00	VIII-3	0306	0321	457	0-135	63	63
110.40	29°36'	116°19.5'	VIII-2	2341	2356	459	0-137	74	74
110.45	29°26'	116°39'	VIII-2	2046	2100	433	0-140	67	67
110.50	29°16'	116°59'	VIII-2	1721	1736	425	0-140	94	94
110.55	29°06.5'	117°18.5'	VIII-2	1426	1441	429	0-142	131	131
110.60	28°57'	117°38'	VIII-2	1111	1126	449	0-141	96	96
110.65	28°46.5'	117°58'	VIII-1	2141	2156	328	0-142	146	146
110.70	28°38.5'	118°20.5'	VIII-1	1811	1826	414	0-142	48	48
110.75	28°26'	118°38'	VIII-1	1516	1531	382	0-141	50	50
110.80	28°16'	118°57'	VIII-1	1111	1126	411	0-141	36	36
110.85	28°05'	119°15.5'	VIII-1	0816	0830	427	0-142	47	47
110.90	27°51'	119°36'	VIII-1	0431	0446	420	0-143	57	57
113.30	29°23.2'	115°21.4'	VII-23	2144	2149	215	0-45	130	130
113.35	29°12'	115°39'	VII-23	1436	1451	352	0-139	176	176
113.40	28°59.5'	115°58.5'	VII-23	1006	1021	426	0-136	24	24
113.45	28°50.6'	116°20.2'	VII-23	0626	0640	414	0-138	17	17
113.50	28°42'	116°37.5'	VII-23	0206	0220	368	0-142	294	163
113.55	28°29'	116°56.3'	VII-22	2206	2220	397	0-139	377	377
113.60	28°16'	117°10.7'	VII-22	1821	1835	396	0-145	192	154

Plankton Volumes, Cruise 5707, July 1957 (cont'd)

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
113.65	28°11.3'	117°28.5'	VII-22	1531	1546	405	0-139	30	30
113.70	27°56.3'	117°57'	VII-22	1156	1211	399	0-140	58	58
113.75	27°48.3'	118°14'	VII-22	0906	0920	414	0-138	80	80
113.80	27°39'	118°32.5'	VII-22	0506	0521	402	0-146	55	55
117.26	28°55.8'	114°40.5'	VII-20	1233	1240	205	0-70	264	264
117.30	28°47.8'	114°56.3'	VII-20	1437	1447	249	0-91	72	72
117.35	28°38'	115°16'	VII-20	1736	1750	376	0-142	67	67
117.40	28°28'	115°35.5'	VII-20	2316	2330	419	0-141	76	76
117.45	28°18'	115°55.2'	VII-21	0301	0315	383	0-143	376	37
117.50	28°10.3'	116°16.8'	VII-21	0546	0600	416	0-139	128	128
117.55	28°04'	116°33'	VII-21	0821	0836	444	0-134	220	220
117.60	27°53'	116°52.8'	VII-21	1116	1130	446	0-132	242	242
117.65	27°42.5'	117°13'	VII-21	1456	1511	386	0-142	130	130
117.70	27°31.3'	117°34'	VII-21	1756	1811	428	0-141	26	26
117.75	27°18'	117°52'	VII-21	2101	2116	410	0-138	37	37
117.80	27°08'	118°11'	VII-21	2341	2355	390	0-142	97	97
118.39	28°18.5'	115°24'	VII-20	2041	2056	423	0-139	45	45
119.33	28°19'	114°53'	VII-20	0237	0248	298	0-102	107	107
120.25	28°23'	114°14.5'	VII-20	0754	0758	132	0-39	160	160
120.30	28°13'	114°34'	VII-20	0448	0456	262	0-85	198	198
120.35	28°03'	114°54'	VII-20	0013	0021	262	0-75	164	164
120.40	27°56.5'	115°14'	VII-19	2124	2127	123	0-23	114	114
120.45	27°43'	115°33'	VII-19	1711	1725	390	0-150	426	426
120.50	27°31.2'	115°52.5'	VII-19	1336	1350	395	0-144	15	15
120.55	27°23.2'	116°08.8'	VII-19	1111	1125	412	0-138	19	19
120.60	27°14'	116°27.7'	VII-19	0831	0845	397	0-140	81	81
120.65	27°04'	116°47.8'	VII-19	0546	0600	404	0-143	62	62
120.70	26°53.5'	117°08.2'	VII-19	0236	0250	419	0-141	311	143
120.75	26°43.8'	117°28.2'	VII-18	2356	0010	417	0-142	134	134
120.80	26°32.5'	117°48.5'	VII-18	2016	2031	410	0-142	146	146
123.37	27°24'	114°39.7'	VII-17	1633	1641	236	0-68	55	55
123.42	27°13.7'	114°59.7'	VII-17	1901	1915	440	0-138	130	130
123.50	26°58'	115°30.5'	VII-17	2316	2331	463	0-135	104	104
123.55	26°48.2'	115°49.7'	VII-18	0216	0230	443	0-137	54	54
123.60	26°37.2'	116°06.6'	VII-18	0446	0500	450	0-139	51	51
123.70	26°18.5'	116°47'	VII-18	1011	1026	434	0-143	58	58
123.80	25°58.5'	117°26.3'	VII-18	1536	1551	459	0-138	41	41
127.34	26°55.3'	114°06'	VII-17	1113	1121	332	0-72	9	9
127.40	26°43.5'	114°29.5'	VII-17	0746	0801	450	0-137	24	24
127.45	26°33.5'	114°48.2'	VII-17	0411	0425	437	0-142	37	37
127.50	26°23.5'	115°08'	VII-17	0201	0215	443	0-138	68	68
127.55	26°13.5'	115°27.2'	VII-16	2311	2326	439	0-142	68	68
127.60	26°03.5'	115°46.5'	VII-16	2006	2020	460	0-133	135	135

Plankton Volumes, Cruise 5707, July 1957 (cont'd)

Position			Time (PST)			Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
127.70	25°44'	116°24.5'	VII-16	1406	1420	401	0-141	37	37
127.80	25°24.5'	117°01'	VII-16	0846	0901	425	0-135	151	151
130.30	26°29'	113°29'	VII-14	1848	1855	257	0-66	974	974
130.35	26°19'	113°48.5'	VII-14	2126	2141	483	0-134	1192	1192
130.40	26°09'	114°07.5'	VII-15	0031	0046	414	0-137	338	338
130.45	25°59'	114°25.7'	VII-15	0411	0426	460	0-136	91	91
130.50	25°49'	114°46'	VII-15	0746	0800	437	0-134	62	62
130.55	25°39'	115°04'	VII-15	0956	1010	480	0-134	25	25
130.60	25°29'	115°24'	VII-15	1626	1640	400	0-139	25	25
130.70	25°08.5'	116°02'	VII-15	2136	2150	448	0-132	105	105
130.80	24°48.5'	116°40'	VII-16	0256	0311	396	0-144	48	48
133.25	26°00.7'	112°42.8'	VII-13	2253	2301	244	0-66	607	607
133.30	25°54.5'	113°07.5'	VII-13	2001	2016	413	0-137	233	233
133.35	25°44.4'	113°26.4'	VII-13	1621	1636	401	0-137	107	107
133.40	25°34.5'	113°45.5'	VII-13	1301	1315	411	0-141	80	80
133.45	25°24.3'	114°04.7'	VII-13	0946	1000	393	0-142	153	153
133.50	25°14.5'	114°24'	VII-13	0616	0630	408	0-138	135	135
133.60	24°54.5'	115°01.5'	VII-12	2346	2400	453	0-142	75	75
133.70	24°35.5'	115°39'	VII-12	1816	1830	441	0-141	43	43
133.80	24°14'	116°18'	VII-12	1231	1246	448	0-140	31	31
137.23	25°34.2'	112°18.7'	VII-10	2308	2315	221	0-60	1269	1269
137.30	25°20'	112°45.5'	VII-11	0241	0256	413	0-142	254	254
137.35	25°10'	113°04.5'	VII-11	0556	0610	397	0-141	217	166
137.40	25°00'	113°23.5'	VII-11	0826	0841	375	0-140	115	115
137.45	24°47.5'	113°44'	VII-11	1156	1210	422	0-139	71	71
137.50	24°40'	114°01.5'	VII-11	1436	1451	424	0-140	33	33
137.60	24°20'	114°39.5'	VII-11	2040	2056	462	0-141	67	67
137.70	23°59.5'	115°17.5'	VII-12	0206	0220	441	0-139	66	66
137.80	23°39'	115°56.2'	VII-12	0711	0726	480	0-137	52	52

Plankton Volumes, Cruise 5708, August 1957

110.33	29°50.5'	115°52.2'	VIII-16	1933	1942	287	0-81	111	111
110.35	29°46.5'	116°00'	VIII-16	1756	1810	483	0-140	81	81
110.40	29°36.5'	116°19.5'	VIII-16	1521	1536	311	0-141	68	68
113.30	29°22.5'	115°17.5'	VIII-17	0025	0028	159	0-43	63	63
113.35	29°12'	115°39'	VIII-17	0311	0320	523	0-139	279	279
113.40	29°02'	115°58.5'	VIII-17	0606	0620	474	0-141	91	91
115.27	29°11'	114°55'	VIII-17	1928	1935	220	0-63	137	137
115.30	29°05'	115°08'	VIII-17	1633	1641	263	0-89	118	118
115.35	28°55'	115°27.5'	VIII-17	1336	1350	495	0-139	65	65
115.40	28°45'	115°47'	VIII-17	1011	1025	458	0-141	63	63

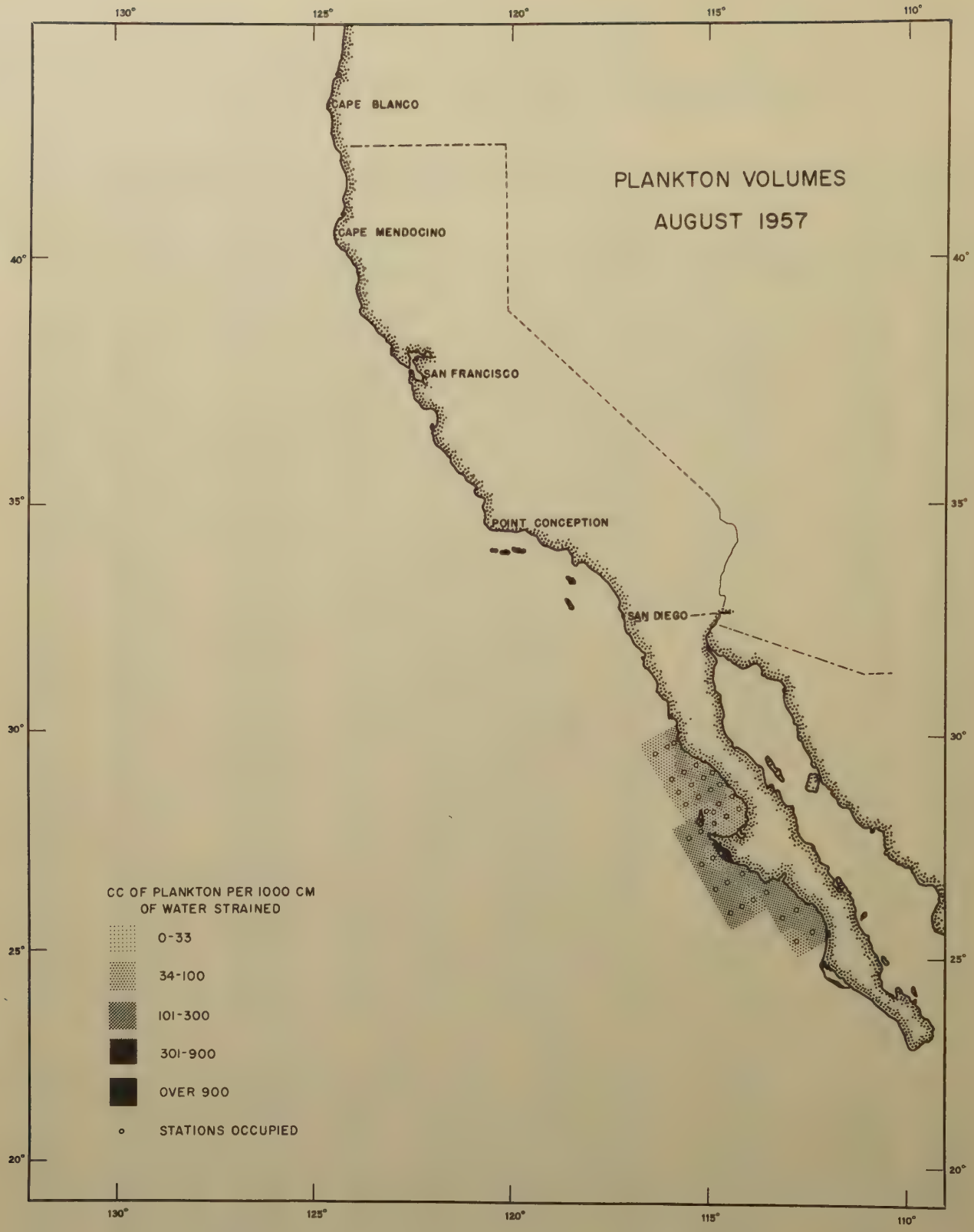

Figure 11.--Plankton volumes, August 1957

Plankton Volumes, Cruise 5708, August 1957 (cont'd)

Sta.	Position N.lat.	W.long.	(1957) Date	Time (PST) Start	End	Vol. water strained C.M.	Depth of haul in meters	Vol.per 1000 C.M.strained Total cc.	Sm.org. cc.
117.26	28°56'	114°41'	VIII-17	2158	2204	195	0-57	128	128
117.30	28°48'	114°56.5'	VIII-18	0012	0022	340	0-100	112	112
117.35	28°38'	115°16'	VIII-18	0301	0315	443	0-142	120	120
117.40	28°28'	115°35.5'	VIII-18	0546	0600	509	0-139	67	67
118^{5}25	28°40.5'	114°25.5'	VIII-18	1658	1706	252	0-76	76	76
118^{5}30	28°30'	114°45.5'	VIII-18	1337	1348	323	0-103	102	102
118^{5}35	28°20.5'	115°05'	VIII-18	0952	1004	396	0-124	48	48
119.33	28°19'	114°53'	VIII-18	1143	1152	340	0-99	65	65
120.25	28°23'	114°14.5'	VIII-18	1924	1929	169	0-50	83	83
120.30	28°13'	114°34'	VIII-18	2209	2216	256	0-85	63	63
120.35	28°03'	114°54'	VIII-19	0043	0051	289	0-62	66	66
120.40	27°56.5'	115°14'	VIII-19	0259	0302	131	0-27	267	267
120.45	27°43'	115°33'	VIII-19	0541	0555	474	0-139	154	154
123.37	27°24'	114°39.7'	VIII-19	1548	1555	250	0-61	333	301
123.42	27°14'	114°59.7'	VIII-19	1306	1320	438	0-144	73	73
123.45	27°08'	115°11.2'	VIII-19	1116	1130	470	0-142	288	202
127.34	26°55.3'	114°06'	VIII-19	2048	2056	261	0-75	306	107
127.40	26°43.5'	114°29.5'	VIII-19	2331	2345	420	0-141	291	291
127.45	26°33.5'	114°48.7'	VIII-20	0206	0220	493	0-140	122	122
130.30	26°29'	113°29'	VIII-20	1453	1501	267	0-72	105	105
130.35	26°19'	113°48.5'	VIII-20	1216	1231	483	0-144	91	91
130.40	26°09'	114°07.5'	VIII-20	0936	0950	493	0-136	101	101
130.45	25°59'	114°25.7'	VIII-20	0656	0710	508	0-137	159	159
133.25	26°04.5'	112°48'	VIII-20	1938	1946	233	0-76	231	231
133.30	25°54.5'	113°07.5'	VIII-20	2211	2226	425	0-147	186	118
137.23	25°34.2'	112°18.7'	VIII-21	1943	1950	257	0-69	273	273
137.30	25°20'	112°45.5'	VIII-21	0256	0310	479	0-145	117	65

Plankton Volumes, Cruise 5709, September 1957

110.33	29°50.5'	115°52.2'	IX-12	1228	1235	274	0-66	963	963
110.35	29°46.5'	116°00'	IX-12	1101	1116	404	0-143	111	111
110.40	29°36.7'	116°19.6'	IX-12	0821	0836	471	0-134	149	149
113.30	29°22.5'	115°17.5'	IX-12	1703	1708	145	0-34	207	207
113.35	29°12'	115°38.8'	IX-12	2026	2040	447	0-140	175	175
113.40	29°02'	115°58.5'	IX-13	0005	0020	469	0-136	170	170
115.27	29°11'	114°55.3'	IX-13	1328	1335	256	0-34	156	156
115.30	29°05'	115°08'	IX-13	1107	1117	297	0-92	169	169
115.35	28°55'	115°27.5'	IX-13	0816	0830	470	0-137	89	89
115.40	28°45'	115°47'	IX-13	0346	0400	432	0-139	79	79
117.26	28°55.7'	114°40.7'	IX-13	1603	1610	257	0-68	155	155
117.30	28°48'	114°56.5'	IX-13	1807	1817	311	0-95	77	77

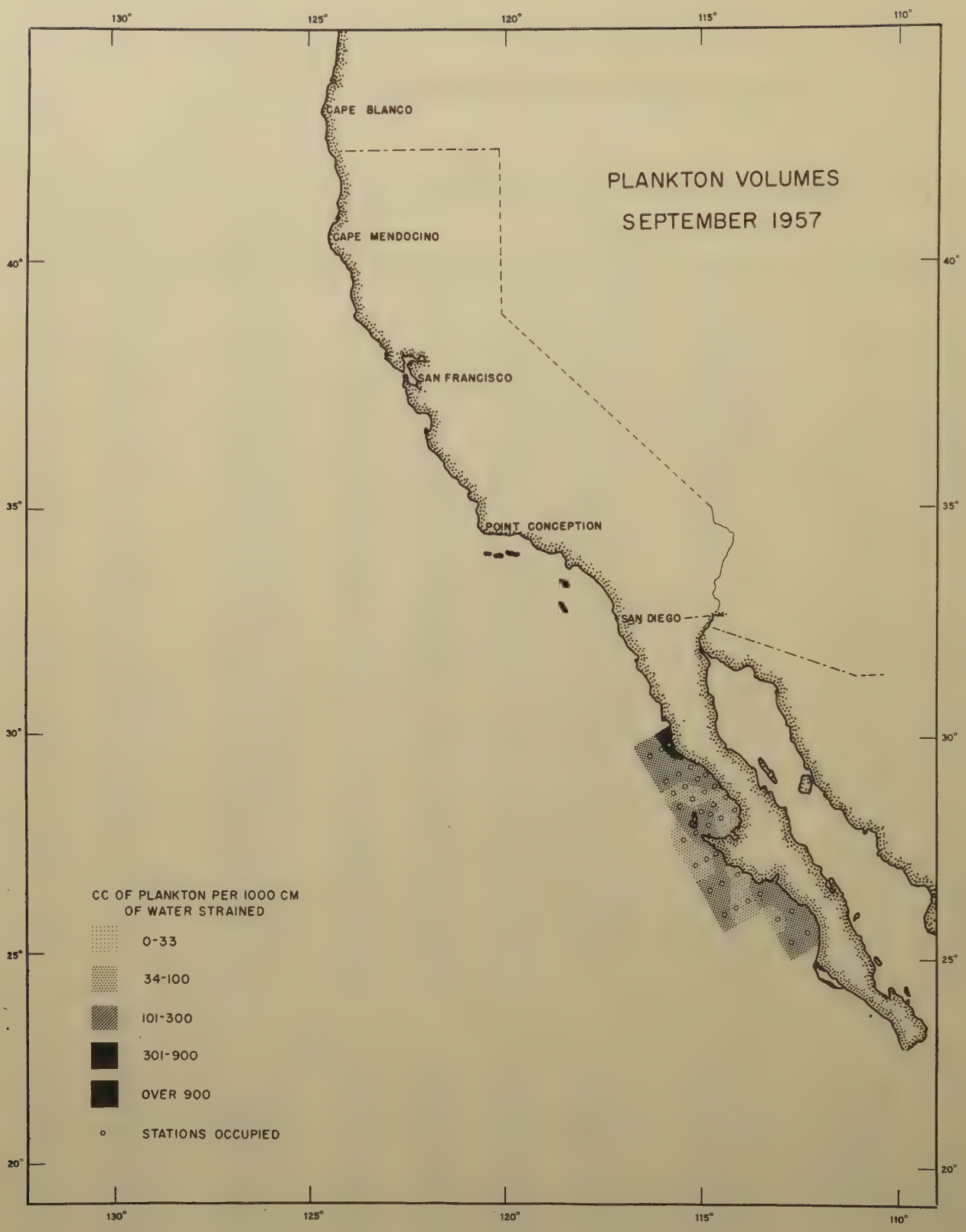

Figure 12.--Plankton volumes, September 1957

Plankton Volumes, Cruise 5709, September 1957 (cont'd)

Sta.	Position N.lat.	Position W.long.	(1957) Date	Time (PST) Start	Time (PST) End	Vol. water strained C.M.	Depth of haul in meters	Vol.per 1000 C.M.strained Total cc.	Vol.per 1000 C.M.strained Sm.org. cc.
117.35	28°38'	115°16'	IX-13	2111	2126	473	0-142	66	66
117.40	28°28'	115°35.5'	IX-14	0006	0020	427	0-141	122	122
118[5]25	28°40.6'	114°25.7'	IX-14	1048	1056	245	0-62	90	90
118[5]30	28°30.7'	114°45.3'	IX-14	0817	0828	267	0-100	165	165
118[5]35	28°20.7'	115°05'	IX-14	0402	0413	312	0-108	103	103
119.33	28°18.8'	114°53.2'	IX-14	0537	0548	346	0-103	179	179
120.25	28°23'	114°15'	IX-14	1318	1325	173	0-55	93	93
120.30	28°13'	114°34'	IX-14	1603	1611	238	0-73	59	59
120.35	28°03'	114°54'	IX-14	1913	1920	225	0-67	160	160
120.40	27°56.4'	115°13.8'	IX-14	2141	2145	114	0-34	175	175
120.45	27°43'	115°33'	IX-15	0014	0028	468	0-132	92	92
123.37	27°24'	114°40'	IX-15	1028	1036	211	0-71	180	180
123.42	27°16.2'	115°00.7'	IX-15	0800	0816	443	0-70	77	77
123.45	27°08.1'	115°12.8'	IX-15	0506	0520	420	0-136	67	67
127.34	26°55.3'	114°06.3'	IX-15	1503	1511	212	0-71	95	95
127.40	26°43.5'	114°29.5'	IX-20	2216	2231	402	0-139	222	222
127.45	26°33.4'	114°48.5'	IX-20	1901	1916	389	0-147	165	165
130.30	26°28.7'	113°29'	IX-16	1218	1225	258	0-66	225	225
130.35	26°18.7'	113°48.2'	IX-20	0656	0711	426	0-134	91	91
130.40	26°09'	114°06.5'	IX-20	1101	1115	417	0-138	86	86
130.45	25°59'	114°25.7'	IX-20	1346	1400	296	0-135	186	186
133.25	26°04.8'	112°47.8'	IX-16	1718	1726	236	0-71	161	161
133.30	25°54.5'	113°07.3'	IX-20	0206	0220	380	0-134	100	100
137.23	25°34'	112°18.7'	IX-17	0813	0821	215	0-69	270	270
137.30	25°20.2'	112°44.7'	IX-19	1811	1826	429	0-141	121	121

Plankton Volumes, Cruise 5710, October 1957

80.51	34°27.5'	120°32'	X-22	2134	2141	262	0-72	199	199
80.55	34°20.5'	120°49'	X-23	0011	0025	508	0-150	427	211
80.60	34°12.5'	121°11'	X-23	0426	0441	522	0-143	134	134
80.70	33°57'	121°53'	X-23	0926	0940	503	0-146	54	54
80.80			Occupied. Sample spoiled						
80.90	33°10.5'	123°05'	X-23	2336	2350	481	0-138	89	89
82.47	34°15'	119°57.5'	X-25	1936	1950	427	0-149	40	40
83.40	34°14'	119°21.5'	X-26	0230	0232	87	0-11	229	229
83.43	34°08'	119°34'	X-26	0001	0015	425	0-151	103	103
83.51	33°52'	120°07.5'	X-25	0856	0910	446	0-136	38	38
83.60	33°34'	120°45'	X-25	0116	0131	443	0-155	97	97
83.70	33°15'	121°23'	X-24	1831	1845	492	0-115	142	142
83.80	32°55'	122°04'	X-24	1116	1131	530	0-140	66	66
83.90	32°37.5'	122°37'	X-24	0611	0625	509	0-134	92	92

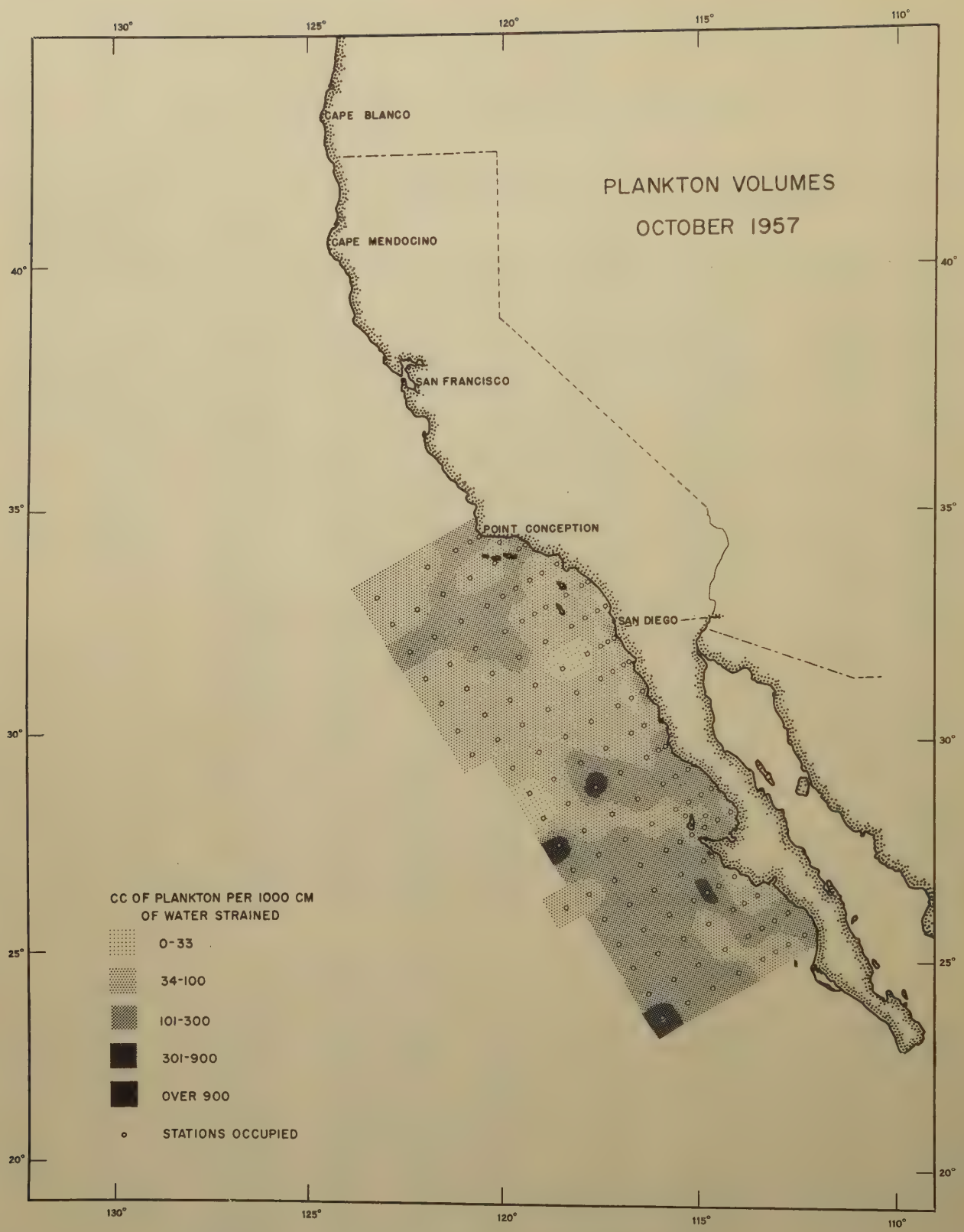

Figure 13.--Plankton volumes, October 1957

Position			(1957)	Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
								Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	cc.	cc.
87.36	33°48'	118°41.5'	X-26	0841	0856	459	0-131	50	50
87.40	33°41.5'	118°59'	X-26	1151	1206	386	0-161	65	65
87.45	33°33'	119°20'	X-26	1606	1621	435	0-135	71	71
87.50	33°20'	119°39.5'	X-26	2043	2050	192	0-61	177	177
87.55	33°07.5'	119°59.5'	X-26	2341	2356	482	0-115	147	147
87.60	32°57.5'	120°16.5'	X-27	0501	0516	400	0-134	125	125
87.70	32°40'	121°02.5'	X-27	1151	1206	437	0-129	162	162
87.80	32°19'	121°42'	X-27	1831	1846	403	0-129	102	102
87.90	31°58'	122°22.5'	X-28	0051	0106	444	0-122	113	113
90.28	33°28.5'	117°47'	X-30	0406	0420	428	0-140	58	58
90.30	33°24.5'	117°55'	X-30	0141	0156	370	0-124	68	68
90.37	33°10.5'	118°23.5'	X-29	2041	2056	394	0-132	84	84
90.45	32°54.5'	118°56'	X-29	1446	1500	563	0-76	62	62
90.50	32°46.5'	119°16.5'	X-29	1141	1155	608	0-83	77	77
90.53	32°39'	119°30'	X-29	0906	0920	412	0-134	61	61
90.60	32°23.5'	119°58.5'	X-29	0416	0431	412	0-138	107	107
90.70	32°05'	120°38'	X-28	2046	2100	420	0-132	110	110
90.80	31°42'	121°17'	X-28	1431	1446	611	0-82	64	64
90.90	31°21'	121°56.5'	X-28	0726	0741	428	0-133	47	47
93.27	32°56'	117°19'	X-30	1038	1045	230	0-66	30	30
93.30	32°50'	117°31.5'	X-31	1701	1716	373	0-132	54	54
93.35	32°40'	117°52'	X-31	1931	1946	305	0-136	92	92
93.40	32°30'	118°12.5'	X-31	2351	0006	448	0-127	78	78
93.50	32°10'	118°53'	XI-1	0611	0626	417	0-142	120	65
93.60	31°50'	119°35'	XI-1	1321	1336	431	0-134	297	297
93.70	31°30'	120°14'	XI-1	1946	2001	429	0-132	91	91
93.80	31°11'	120°52'	XI-2	0206	0221	442	0-140	93	93
93.90	30°52.5'	121°29'	XI-2	0836	0851	418	0-144	77	77
97.30	32°15.5'	117°08.5'	XI-4	0654	0658	147	0-31	163	163
97.32	32°12.5'	117°19'	XI-4	0411	0426	379	0-142	18	18
97.35	32°06'	117°29'	XI-4	0156	0210	398	0-139	50	50
97.40	31°55'	117°49.5'	XI-3	2206	2221	407	0-139	20	20
97.50	31°35'	118°30'	XI-3	1551	1606	395	0-139	20	20
97.60	31°14.5'	119°27'	XI-3	0906	0921	441	0-140	45	45
97.70	30°53.5'	119°43'	XI-3	0351	0406	534	0-112	69	69
97.80	30°35'	120°28'	XI-2	1931	1945	430	0-143	42	42
97.90	30°18'	121°06'	XI-2	1456	1510	434	0-135	65	65
100.29	31°42'	116°43'	XI-4	1616	1630	386	0-122	75	75
100.30	31°41'	116°46.5'	XI-4	1716	1731	424	0-136	68	68
100.35	31°31'	117°07'	XI-4	2051	2106	413	0-135	51	51
100.40	31°21'	117°27'	XI-4	2356	0011	438	0-125	43	43
100.50	31°02.5'	118°08'	XI-5	0611	0626	430	0-129	60	60
100.60	30°44'	118°48.5'	XI-5	1221	1236	429	0-136	51	51

Plankton Volumes, Cruise 5710, October 1957 (cont'd)

Position				Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
			(1957)					Total	Sm.org.
Sta.	N.lat.	W.long.	Date	Start	End	C.M.	in meters	cc.	cc.
100.70	30°23'	119°28.5'	XI-5	1831	1846	453	0-129	82	82
100.80	30°02'	120°07.5'	XI-6	0031	0046	460	0-138	50	50
100.90	29°40.5'	120°40.5'	XI-6	0631	0645	450	0-139	87	87
103.30	31°05'	116°25'	XI-7	2018	2024	210	0-55	243	243
103.35	30°55'	116°45'	XI-7	1656	1711	434	0-145	23	23
103.40	30°45'	117°06'	XI-7	1301	1316	431	0-136	35	35
103.50	30°29'	117°45'	XI-7	0726	0741	422	0-144	50	50
103.60	30°08.5'	118°26'	XI-7	0211	0226	438	0-140	96	96
103.70	29°47'	119°04.5'	XI-6	1956	2011	416	0-139	79	79
103.80	29°27'	119°44'	XI-6	1341	1356	437	0-133	41	41
107.32			Occupied. Sample not quantitative						
107.35	30°20'	116°23'	X-4	1121	1135	485	0-126	35	35
107.40	30°10'	116°43'	X-4	1456	1510	399	0-145	88	88
107.50	29°50'	117°24'	X-4	2021	2036	342	0-149	53	53
107.60	29°30'	118°02'	X-5	0046	0100	406	0-151	108	108
107.70	29°10.5'	118°43'	X-5	0641	0655	438	0-142	93	93
107.80	28°51'	119°22'	X-5	1126	1140	449	0-144	16	16
110.33	29°47.8'	115°52'	X-6	1848	1856	273	0-83	278	278
110.35	29°46'	116°00'	X-6	1726	1740	511	0-125	149	149
110.40	29°36'	116°19.5'	X-6	1416	1430	478	0-133	82	82
110.50	29°10.5'	117°00.5'	X-6	0826	0840	479	0-136	115	115
110.60	28°54'	117°39'	X-6	0311	0325	407	0-144	315	315
110.70	28°36'	118°18'	X-5	2201	2216	446	0-147	72	72
110.80	28°15'	118°57'	X-5	1626	1640	482	0-134	17	17
113.30	29°22.5'	115°18.2'	X-6	2358	0004	181	0-50	177	177
113.35	29°12'	115°38.8'	X-7	0311	0326	443	0-144	120	120
113.40	29°02'	115°59'	X-7	0606	0620	448	0-139	219	219
113.50	28°41.7'	116°38'	X-7	1116	1130	510	0-122	106	106
113.60	28°21'	117°17'	X-7	1621	1636	487	0-127	99	99
113.70	28°02'	117°56'	X-7	2121	2136	462	0-140	78	78
113.80	27°41'	118°34'	X-8	0221	0236	488	0-134	349	349
117.26	28°55.8'	114°40.8'	X-9	2308	2315	196	0-59	214	214
117.30	28°47.8'	114°56'	X-9	2103	2112	328	0-76	153	153
117.35	28°38'	115°15.8'	X-9	1801	1816	513	0-123	115	115
117.40	28°28'	115°35.5'	X-9	0501	0516	456	0-132	83	83
117.50	28°08'	116°15'	X-8	2306	2320	455	0-141	79	79
117.60	27°47.3'	116°53'	X-8	1756	1811	569	0-116	193	193
117.70	27°27.5'	117°33'	X-8	1256	1310	535	0-120	185	185
117.80	27°07'	118°16'	X-8	0731	0746	497	0-99	213	213
118.39	28°18.5'	115°23.8'	X-9	0721	0736	509	0-121	51	51
119.33	28°19.3'	114°52.8'	X-10	0838	0846	295	0-77	98	98
120.25	28°23'	114°14.5'	X-10	0324	0329	212	0-39	80	80
120.30	28°13.3'	114°34'	X-10	0603	0611	339	0-72	106	106

Plankton Volumes, Cruise 5710, October 1957 (cont'd)

Sta.	Position N.lat.	Position W.long.	(1957) Date	Time (PST) Start	Time (PST) End	Vol. water strained C.M.	Depth of haul in meters	Vol.per 1000 C.M.strained Total cc.	Vol.per 1000 C.M.strained Sm.org. cc.
120.35	28°03'	114°54'	X-10	1048	1055	244	0-55	140	140
120.40	27°52.8'	115°13.5'	X-11	0724	0728	140	0-23	57	57
120.45	27°43'	115°33'	X-11	1026	1041	471	0-132	157	157
120.50	27°33'	115°52'	X-11	1336	1350	472	0-129	246	246
120.60	27°11'	116°30'	X-11	1836	1850	445	0-134	247	247
120.70	26°49'	117°07.5'	X-11	2351	0006	420	0-137	138	138
120.80	26°27.5'	117°44'	X-12	0501	0515	456	0-134	53	53
120.90	26°03'	118°28'	X-12	1016	1030	464	0-138	39	39
123.37	27°23'	114°40'	X-13	1643	1650	192	0-52	141	141
123.42	27°12.8'	114°55.8'	X-13	1401	1415	450	0-132	118	118
123.50	26°57.8'	115°30.5'	X-13	0941	0956	499	0-127	198	198
123.60	26°41'	116°00'	X-13	0416	0430	437	0-134	233	233
123.70	26°19'	116°46.5'	X-12	2241	2256	448	0-138	176	176
123.80	25°59'	117°25'	X-12	1711	1725	454	0-134	167	167
127.34	26°55.3'	114°06'	X-13	2058	2106	211	0-72	5	5
127.40	26°43'	114°29'	X-14	0016	0031	382	0-144	267	267
127.45	26°33.7'	114°48'	X-14	0251	0305	376	0-144	399	399
127.50	26°24'	115°08'	X-14	0556	0611	328	0-142	177	177
127.60	26°03.5'	115°45.5'	X-14	1101	1116	404	0-131	223	223
127.70	25°43.3'	116°24'	X-14	1606	1620	415	0-128	120	120
127.80	25°24'	117°02.3'	X-14	2111	2126	389	0-140	255	255
130.30	26°27.7'	113°30.3'	X-16	0508	0516	189	0-64	69	69
130.35	26°17.7'	113°47'	X-16	0206	0220	332	0-142	57	57
130.40	26°06.3'	114°05'	X-15	2306	2320	290	0-152	124	124
130.50	25°45'	114°39.7'	X-15	1806	1821	374	0-124	69	69
130.60	25°24'	115°20'	X-15	1256	1310	384	0-131	208	208
130.70	25°06'	116°00'	X-15	0706	0721	435	0-130	276	276
130.80	24°49'	116°39'	X-15	0206	0220	358	0-139	187	187
133.25	26°05'	112°46.8'	X-16	1008	1016	219	0-66	146	146
133.30	25°53.5'	113°06.5'	X-16	1246	1300	468	0-128	130	130
133.35	25°43'	113°25.5'	X-16	1521	1535	421	0-139	114	114
133.40	25°33.3'	113°43'	X-16	1831	1845	446	0-136	146	146
133.50	25°14'	114°23.5'	X-16	2336	2350	439	0-136	68	68
133.60	24°56'	115°03.5'	X-17	0441	0456	464	0-136	164	164
133.70	24°38'	115°41'	X-17	0946	1000	449	0-126	125	125
133.80	24°20.7'	116°20.5'	X-17	1341	1356	330	0-134	291	291
137.23	25°34'	112°18.8'	X-19	0038	0045	203	0-74	123	123
137.30	25°20.3'	112°44.8'	X-18	2141	2156	392	0-145	84	84
137.35	25°10'	113°04.5'	X-18	1846	1900	381	0-139	97	97
137.40	25°00'	113°23'	X-18	1611	1625	427	0-135	82	82
137.50	24°39'	114°04'	X-18	1051	1100	456	0-133	114	114
137.60	24°21.5'	114°40'	X-18	0501	0515	445	0-137	103	103
137.70	24°03'	115°19.5'	X-17	2351	0005	420	0-136	119	119
137.80	23°44'	116°00'	X-17	1846	1900	430	0-135	702	674

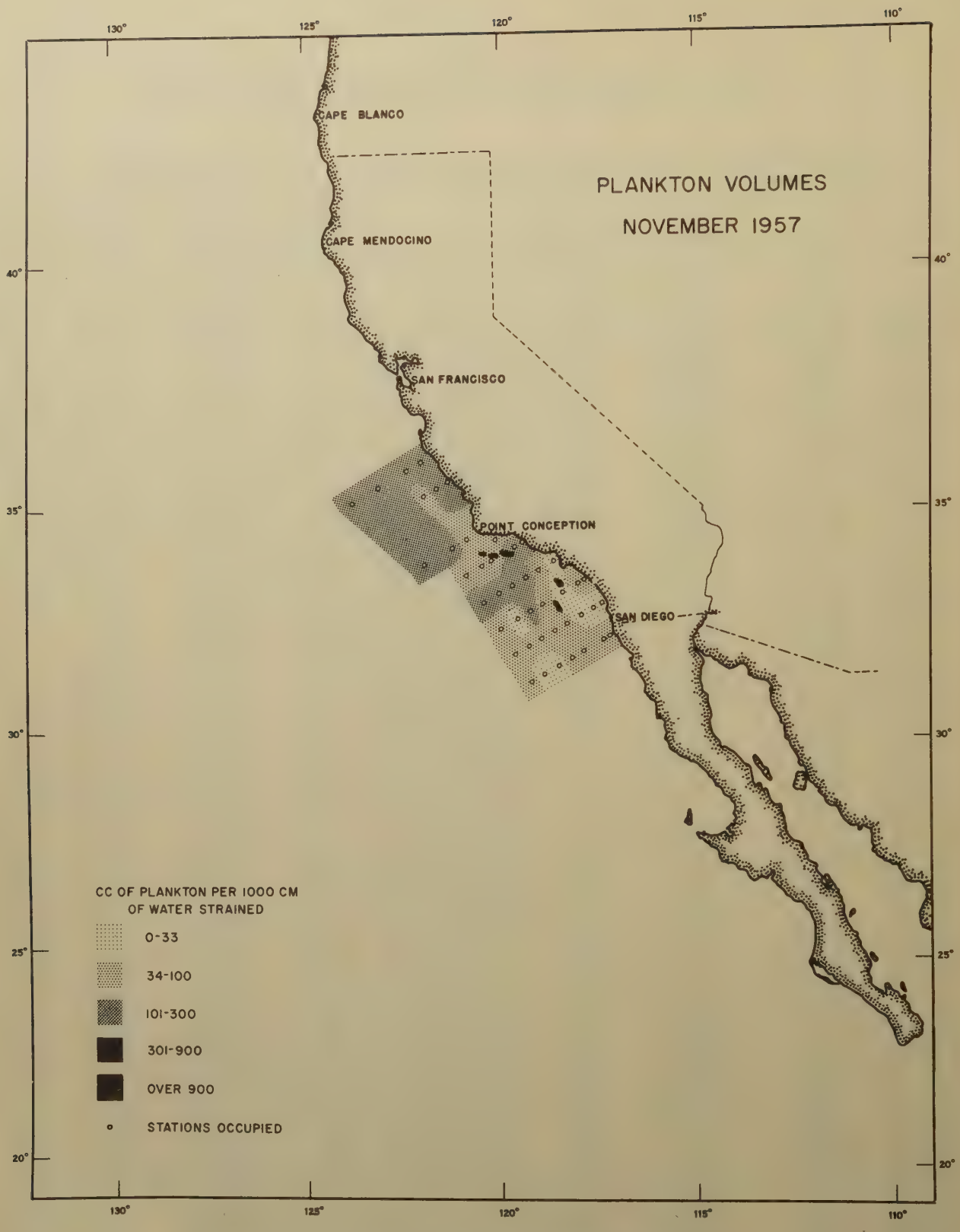

Figure 14.--Plankton volumes, November 1957

Plankton Volumes, Cruise 5711, November 1957

Position				Time (PST)		Vol. water strained	Depth of haul	Vol. per 1000 C.M. strained	
Sta.	N. lat.	W. long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm. org. cc.
70.55	36°03'	122°02'	XI-17	1446	1501	487	0-130	117	117
70.60	35°53'	122°23'	XI-17	1816	1830	463	0-142	173	173
70.70	35°34'	123°06'	XI-17	2351	0006	513	0-126	154	154
70.80	35°14'	123°48'	XI-18	0511	0526	453	0-141	132	132
73.51	35°36.5'	121°21.5'	XI-17	0221	0236	433	0-147	111	111
73.55	35°29'	121°37'	XI-17	0526	0540	443	0-141	158	158
73.60	35°19'	121°58'	XI-17	0836	0851	458	0-142	65	65
80.55	34°19.5'	120°48.5'	XI-18	2346	0001	467	0-143	96	96
80.60	34°09.5'	121°10'	XI-19	0226	0240	465	0-137	116	116
80.70	33°49'	121°50'	XI-19	0826	0840	480	0-135	196	196
82.47	34°15'	119°58'	XI-20	0111	0126	311	0-146	96	96
83.40	34°14'	119°22'	XI-20	0900	0902	51	0-12	196	196
83.43	34°08'	119°34'	XI-20	0341	0356	246	0-139	102	102
83.51	33°52'	120°05'	XI-19	2103	2110	212	0-70	47	47
83.55	33°46'	120°25'	XI-19	1746	1800	519	0-120	60	60
83.60	33°37'	120°47'	XI-19	1441	1456	508	0-127	59	59
87.36	33°48'	118°42'	XI-20	1336	1351	522	0-117	25	25
87.40	33°38'	119°03'	XI-20	1631	1646	363	0-141	83	83
87.45	33°30'	119°19'	XI-20	1841	1856	400	0-140	160	160
87.50	33°20'	119°39'	XI-20	2133	2140	185	0-60	194	194
87.55	33°10'	120°00'	XI-21	0031	0046	457	0-118	142	142
87.60	33°00'	120°21'	XI-21	0406	0420	367	0-141	123	123
90.28	33°28'	117°46'	XI-23	0431	0446	252	0-139	52	52
90.30	33°25'	117°55'	XI-23	0216	0250	410	0-120	59	59
90.37	33°14'	118°27'	XI-22	0101	0116	558	0-107	30	30
90.45	32°55'	118°56'	XI-21	1826	1840	471	0-137	74	74
90.50	32°50'	119°21'	XI-21	1446	1500	527	0-121	131	131
90.55	32°41'	119°42'	XI-21	1146	1200	433	0-131	18	18
90.60	32°32'	120°03'	XI-21	0836	0851	424	0-143	57	57
93.27	32°55'	117°20'	XI-23	0921	0936	479	0-134	27	27
93.30	32°48'	117°32'	XI-23	1121	1136	450	0-137	20	20
93.35	32°39'	117°52'	XI-23	1411	1426	514	0-119	19	19
93.40	32°29'	118°13'	XI-23	1656	1711	498	0-133	54	54
93.45	32°19'	118°33'	XI-23	1946	2000	454	0-141	66	66
93.50	32°10'	118°53'	XI-23	2231	2246	462	0-137	54	54
93.55	32°00'	119°14'	XI-24	0126	0141	482	0-123	83	83
93.60	31°50'	119°33'	XI-24	0416	0430	340	0-138	91	91
97.30	32°15'	117°08'	XI-25	0429	0434	114	0-48	62	62
97.32	32°11'	117°16'	XI-25	0251	0306	305	0-119	72	72
97.40	32°00'	117°50'	XI-24	2036	2051	277	0-141	83	83
97.45	31°45'	118°10'	XI-24	1711	1725	371	0-137	38	38
97.50	31°35'	118°30'	XI-24	1431	1446	553	0-108	29	29
97.55	31°25'	118°50'	XI-24	1146	1201	498	0-132	22	22
97.60	31°16'	119°11'	XI-24	0906	0921	267	0-138	75	75

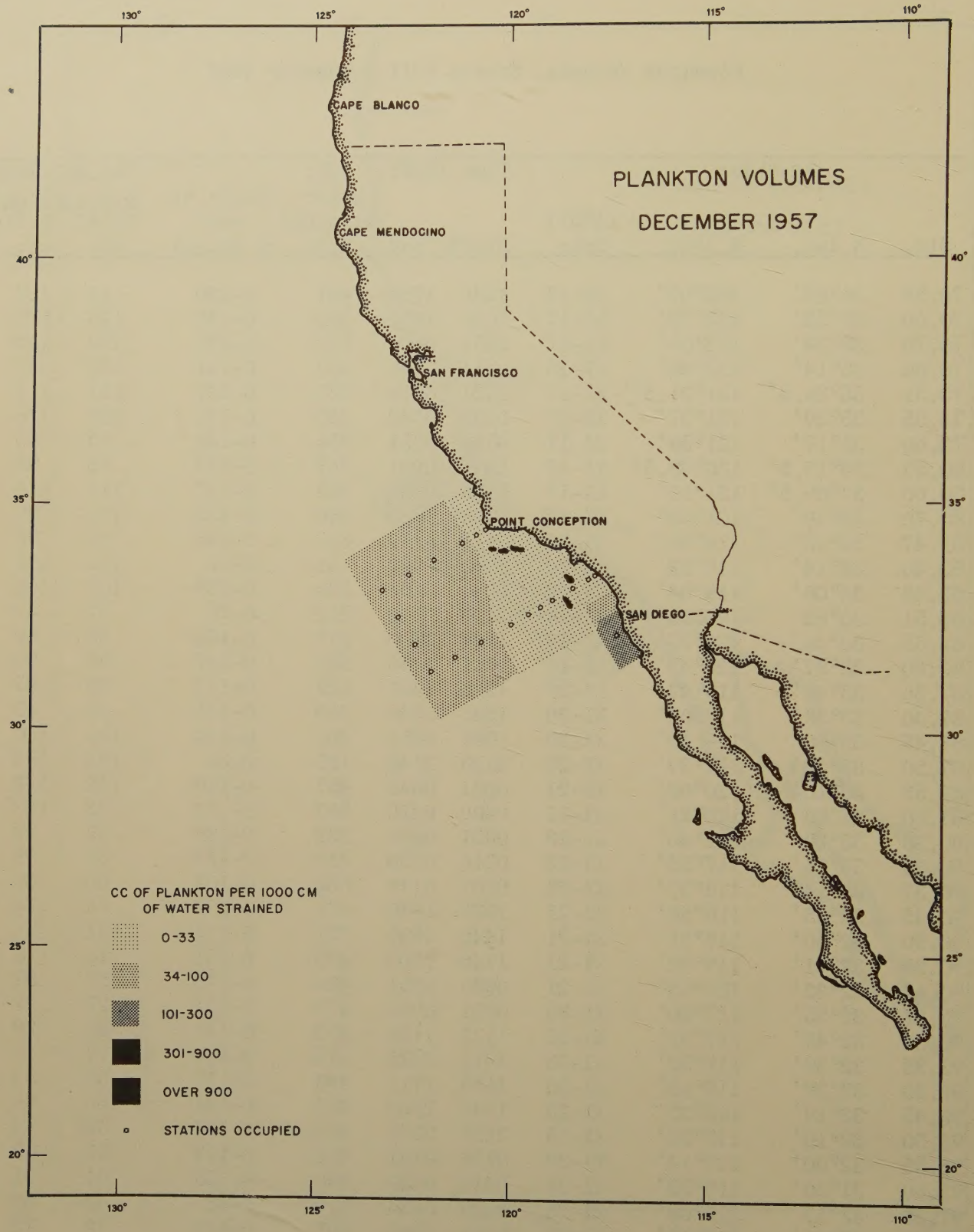

Figure 15.--Plankton volumes, December 1957

Plankton Volumes, Cruise 5712, December 1957

Position			Time (PST)		Vol. water strained	Depth of haul	Vol.per 1000 C.M.strained	
Sta.	N.lat.	W.long.	(1957) Date	Start	End	C.M.	in meters	Total cc.	Sm.org. cc.
80.51	34°26.5'	120°32.5'	XII-14	1558	1605	274	0-69	13	13
80.55	34°19'	120°48'	XII-14	1826	1841	432	0-130	26	26
80.60	34°09'	121°09'	XII-14	2200	2216	398	0-146	55	55
80.70	33°50'	121°51'	XII-15	0736	0750	424	0-140	38	38
80.80	33°29'	122°31.5'	XII-15	1356	1410	440	0-132	58	58
80.90	33°05.5'	123°10'	XII-15	2141	2156	443	0-142	52	52
83.90	32°34.5'	122°44'	XII-16	0405	0421	472	0-142	86	86
87.90	32°02'	122°16.5'	XII-16	1021	1036	484	0-153	60	60
90.28	33°28.5'	117°46.5'	XII-18	0841	0856	432	0-142	12	12
90.30	33°24.5'	117°55'	XII-18	0621	0636	434	0-154	2	2
90.37	33°11'	118°23.5'	XII-18	0126	0141	427	0-128	14	14
90.45	32°54.5'	118°56'	XII-17	2046	2100	430	0-138	23	23
90.50	32°44.5'	119°16.5'	XII-17	1802	1813	349	0-135	12	12
90.55	32°36'	119°34.5'	XII-17	1446	1501	421	0-147	32	32
90.60	32°32'	119°46.5'	XII-17	1131	1146	423	0-139	10	10
90.70	32°10'	120°30'	XII-17	0521	0535	440	0-136	38	38
90.80	31°46.5'	121°12'	XII-16	2246	2300	476	0-133	46	46
90.90	31°22.5'	121°56'	XII-16	1636	1651	427	0-139	38	38
97.32	32°15.3'	117°13'	XII-20	0455	0509	419	0-132	153	153
100.40	31°39'	117°25'	XII-20	2344	2358	452	0-133	44	44
103.50	30°26'	117°48'	XII-19	1420	1434	439	0-141	48	48
107.60	29°31'	118°03'	XII-18	0721	0735	407	0-151	34	34
110.70	28°30'	118°20'	XII-18	2201	2216	462	0-147	22	22

INT.DUP.,D.C.59-64978